DOCUMENT RESUME

ED 143 132 EA 009 862

AUTHOR Gluck, Dolores K.; Baker, Michael E.
TITLE A Study of School Lunch Programs in Pennsylvania.
INSTITUTION Carnegie-Mellon Univ., Pittsburgh, Pa. Educational Management Development Center.
SPONS AGENCY Pennsylvania State Dept. of Education, Harrisburg. Bureau of Educational Administration and Management Support Services.
PUB DATE Feb 77
NOTE 88p.

EDRS PRICE MF-$0.83 HC-$4.67 Plus Postage.
DESCRIPTORS Administrative Personnel; Administrator Responsibility; *Cost Effectiveness; *Efficiency; Elementary Secondary Education; Federal Programs; Food Service Workers; *Lunch Programs; Models; Nutrition; *Program Evaluation; Questionnaires; Statistical Analysis; Student Participation; Wages
IDENTIFIERS Food Service Administrators; *National School Lunch Program; Pennsylvania

ABSTRACT

Major areas of concern of Pennsylvania school food service management--student participation, labor cost, food cost, and uses of management information--are analyzed and recommendations are made. The management information study is an analysis of the findings from a six-county sample survey of record keeping practices and personal perceptions of 41 food service administrators in the southwestern Pennsylvania region. The method used for the participation, labor cost, and food cost studies was the design of three models to determine the most significant factors that affect each of these areas based on data collected from a variety of sources for 84 of the 94 programs in the six-county region. The findings should be representative of most districts across the state since the programs in the areas studied represent a wide variety of program sizes, each service type (unit, bulk satellite, and mixed), management type (degree, nondegree, and management company), geographic location (rural, urban, and suburban), and economic status. (Author/MLF)

****
* Documents acquired by ERIC include many informal unpublished *
* materials not available from other sources. ERIC makes every effort *
* to obtain the best copy available. Nevertheless, items of marginal *
* reproducibility are often encountered and this affects the quality *
* of the microfiche and hardcopy reproductions ERIC makes available *
* via the ERIC Document Reproduction Service (EDRS). EDRS is not *
* responsible for the quality of the original document. Reproductions *
* supplied by EDRS are the best that can be made from the original. *
****

ED143132

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Dolores K. Gluck

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) AND THE ERIC SYSTEM CONTRACTORS."

A STUDY OF SCHOOL LUNCH PROGRAMS IN PENNSYLVANIA

by

Dolores K. Gluck*
Michael E. Baker**

submitted to

Dr. John E. Kosoloski
Bureau Director
Bureau of Educational Administration
and Management Support Services
Pennsylvania Department of Education

February, 1977

Educational Management Development Center (EMDEC)
School of Urban and Public Affairs
Carnegie-Mellon University
5000 Forbes Avenue
Pittsburgh, Pennsylvania 15213

EA 009 862

* Project Manager
** Project Consultant

ACKNOWLEDGMENTS

We are grateful to the following people for giving their time and expertise to this project:

Gerald Baron, Chief, Food Protection Division, Allegheny County Health Department

Elizabeth Beach, Food Service Supervisor, Keystone Oaks School District, Allegheny County

Bernard Brachfeld, Regional Director, Nutrition and Technical Services Staff, U. S. Department of Agriculture

Donald Bussler, Director of Food Service, Pittsburgh School District

Helen Ferguson, Director of Food Service, Bethel Park School District, Allegheny County

Evelyn Herwitz, graduate student, School of Urban and Public Affairs, Carnegie-Mellon University

Eileen Hileman, Food Service Supervisor, North Hills School District, Allegheny County

Gertrude Marsh, Area Consultant, Division of Food and Nutrition, Pennsylvania Department of Education

Eli Nenadovich, Coordinator of Fiscal Section, Division of Food and Nutrition, Pennsylvania Department of Education

Bernard Niederer, Supervisor, Comptrollers Office, Food and Nutrition Services, Pennsylvania Department of Education

Christine Peterson, Director of Field Service, Division of Food and Nutrition, Pennsylvania Department of Education

Joel Simpson, Chief, Division of Food Protection, Pennsylvania Department of Environmental Protection

Wilbert Watzel, Food Distribution Representative, Bureau of Government Donated Foods, Harrisburg

Carl Wiest, Field Supervisor, Bureau of Donated Foods, Harrisburg

ABSTRACT

Study Purpose and Method

The purpose of this study of the Pennsylvania school lunch program is to analyze major areas of school Food Service management concern: student participation, labor cost, food cost and uses of management information, and to make recommendations which can be used to manage these areas more effectively.

The method used for the management information study was an analysis of the findings from a six county sample survey of record keeping practises and personal perceptions of 41 Food Service Administrators (FSAs) in the southwestern Pennsylvania region. (Fayette, Greene, Washington, Allegheny, Westmoreland and Beaver counties)

The method used for the participation, labor cost and food cost studies was the design of three models to determine the most significant factors which affect each of these areas.

Although the information for both samples was collected from the southwestern Pennsylvania region, the findings should be representative of most districts across the state since the programs in the areas studied represent a wide variety of program sizes, each service type (unit, bulk satellite and mixed), management type (degree, non degree and management company), geographic location (rural, urban and suburban), and economic status.

Recommendations

The following recommendations were based on the major findings of this study:

1. Careful consideration should be given to the implications of lunch program policy decisions concerning service type (unit, satelite or mixed), lunch price, size of a la carte program, open or closed lunch policy, and type A choice (choice in Type A food categories).

2. Computation of man hours per meal is a management tool that should be used by all FSAs to measure labor productivity.
3. FSAs should seek competitive bids on food and consider cooperative food buying with other school districts in order to keep food costs down.
4. A perpetual inventory system is a management tool that FSAs could adopt for better supervision of inventory.
5. The FSA should be involved in all decisions which affect the Food Service program.
6. In-service training in bookkeeping and accounting procedures is needed for many FSAs.
7. FSAs whose cost of producing a lunch is below the full reimbursement ought to make sure that they are claiming all costs to which they are entitled on their monthly vouchers.
8. The quality of training of future FSAs in degree programs and in the districts ought to be considered because of their effect on the future of the Pennsylvania school lunch program.

TABLE OF CONTENTS

		Page
	Acknowledgements	i
	Abstract	ii
	Introduction	1
Section I	Management Information Survey Study	1
	A Discussion and Analysis of Major Findings	2
	B Findings from Analysis of Survey Variables	5
	C Summary	7
Section II	Participation and Cost Study	7
	A Participation Model Results	9
	B Labor Cost Model Results	13
	C Food Cost Model Results	18
	D Variance of Each Model	21
	E Interesting Variable Correlations	22
	F Study Procedure	22
Section III	The Management Study and the Models	23
Section IV	Recommendations	24
Appendices:		
	A Method Used to Analyze Survey	A-1
	B Survey Questionnaire and Summary of Responses	B-1
	C Income Statement Example	C-1
	D Variable Names, Explanations, Means and Standard Deviations, Use in Models, and Data Sources	D-1
	E Using the Participation Rate, Labor Cost, and Food Cost Models to Compare a School District to Other School Districts	E-1
	F Revenue Implications of Changes in the Ratio of A la Carte Sales to Type A Sales	F-1
	G Food Service Administrator (FSA) Recommendations for Improving Food Service Programs	G-1
	H Selected Variable Profiles	H-1
	I Labor Hours per Day and Daily Number of Meals	I-1
	J Nutrition Education Activities	J-1

LIST OF FIGURES

#	Title	Page
1	Participation Profile	10
2	Relationship of Participation Rate to the Ratio of A la Carte Sales to Type A Sales	14
3	Labor Cost Profile	16
4	Food Cost Profile	19
F-1	Fully Paid Type A and A la Carte Revenues for Different A la Carte Sales Ratios	F-1
H-1	Income Profile	H-1
H-2	Aprice Profile	H-2
H-3	Alaratio Profile	H-3
H-4	Man Hours per Meal Profile	H-4
H-5	Years Experience Profile	H-5
H-6	Union Percent Profile	H-6
H-7	Percent General Fund Support Profile	H-7
H-8	Free and Reduced Percent Profile	H-8
I-1	Daily Labor Hours in Relation to Daily Number of Meals	I-2

LIST OF TABLES

#	Title	Page
1	Relationship Between Public Relations and In-Service Training	6
A-1	Relationship Between Degree and Meals per Man Hour	A-2
A-2	Relationship Between Degree and Public Relations	A-2
C-1	Income Statement	C-2
C-2	Financial Statement	C-3
E-1	Table of Log alaratio	E-3
E-2	Type A and A la Carte Choice	E-6
E-3	"Other" Costs as Part of Total Program Costs for 1975/76	E-7
J-1	Nutrition Education Activities	J-2

INTRODUCTION

The National School lunch program has grown in the past 30 years (1946-76) from 910,926,000 to 4,178,400,000 annual lunches served to children in 90,000 schools. In Pennsylvania during the same period, lunches served to children increased from 25,790,054 to 200,718,767 with program costs for the 912 participating schools totaling $211,745,282 in 1976.

The rapid expansion in the number of meals and kitchens has meant that management of school Food Service programs has required a vast increase in knowledge and skills in a variety of areas: more sophisticated record-keeping, personnel management, food purchasing and storage, inventory practices, public relations, nutrition education, menu planning and many others.

The purpose of this study of Pennsylvania public school Food Service programs is to identify major factors to use in assessing the programs; analyze the ones which were selected--participation, labor cost, food cost, use of management information; and to make recommendations which can be used to manage these areas more effectively.

After study of school lunch and food service materials, visits to several kitchen types and discussions with knowledgable school Food Service people, the project activities were planned: First, a survey of administrators of Food Service programs concerning their use of management information and their perceptions about various aspects of the program; second, the analysis of food cost, labor cost and participation using a model for each.

SECTION I: MANAGEMENT INFORMATION SURVEY

A questionnaire was designed and pretested on several school Food Service Administrators (FSAs) and modified each time. It was administered in person to a representative sample of 41 FSAs in the six county Southwestern

Pennsylvania region. (42 were selected, 1 refused.) Each interview took approximately 1 1/2 hours. The range was 45 minutes to 3 hours. The 94 Food Service programs in this region from which the survey sample was picked include a variety of program sizes, each service type (unit, bulk satellite and mixed), management type (degree, non-degree and management company), geographic location (rural, urban, suburban) and economic status. The questionnaire focused on the FSA's education and experience, job responsibilities, record keeping practices, staff support, public relations and in-service training activities and his or her perceptions and attitudes about various aspects of the Food Service program.

Each FSA was interviewed in his or her office by the same project staff person. Only one FSA refused to be surveyed. (For method used to analyze surveys see Appendix A.)

A. Discussion of Major Findings

Questions 7, 9 and 14 (See Appendix B for complete questionnaire and summary of responses.)

While Question 7 lists what FSAs consider their major responsibilities, Question 9 looks at the staff support that each FSA reported is available to carry out these responsibilities. In addition, Question 9 is concerned with the involvement of administrators, Board of Education, teachers, students, and parents in the Food Service program and the FSA's perception of their attitudes toward the program. Question 14 is concerned with if and how this support is used for record keeping activities and whether or not the FSA understands the uses of these records.

Question 7 (Major responsibilities)

The FSA's major responsibilities are making recommendations for hiring personnel, accounting, menu planning, supervising kitchen heads, keeping informed about new ideas in Food Service, food and equipment purchasing

plus other areas such as preparing banquets, public relations and participating in union negotiations.

Question 9 (Staff Support)

The findings from this question revealed that 37 (90%) FSAs have either their own or Central Office bookkeeping, secretarial or clerical help. Twenty-two FSAs have both secretarial and bookkeeping aid, 15 secretaries also double as bookkeepers. Thirteen FSAs have no bookkeeping support and 13 others have no secretary. The number of staff in relation to size or program increases from one to two to three as program size increases although several FSAs with large programs have only one staff person. Four FSAs reported that they have no secretarial or bookkeeping support. (Although several people were in the process of adding to their staffs.) Complaints were not about lack of staff. The major reported problem is too much record keeping paperwork.

Actual involvement in Food Service program by Superintendents, Board of Education, Principals, teachers, students and parents is minimal and mandatory or required by the job. For example, the role of 62% of Superintendents who are involved is supervisory, 95% of Board of Education activities are those required by law such as budget or personnel, and 53% of Principal activities such as lunch room scheduling are required by the job. There are, of course, exceptions where the Superintendents are actively engaged in praising the Food Service program to the public, where Principals have constant and good communication with Food Service employees, where teachers engage in nutrition education. In 19 school districts, FSAs have meetings with students at least once a year or more. But the FSAs stated repeatedly that everyone from Superintendent to student should be more concerned about Food Service.

From FSA answers to Question 9 about the attitudes of school district administrators, teachers, Board of Education, parents and students toward Food Service began to emerge one of the most important findings of this study: the perception that FSAs have of themselves and of other's attitudes toward them. Again and again, old and young, degree and non-degree people stated the same feelings:

> We are looked down on by everyone from Superintendent to student. We are not given credit for the responsibility that we have nor the job that we do. We are viewed as unimportant and therefore feel isolated from the school system. Neither the Board of Education, the teachers or the community understand what the federal lunch program is about, that it is not a for-profit business. Adult attitudes affect students and in turn lunch participation.

In districts where communication and cooperation are good, the FSAs stressed that these attitudes are essential to good job performance. In addition, many of these same people explained the importance of the FSA and kitchen staff's attitude toward students. Communication, contact and caring about students has an impact on participation, they said. The FSA's ability to be flexible and to try new ideas was also mentioned as extremely important.

Question 14 (Use of staff support in record keeping. FSA understanding of record keeping.)

Findings reveal similar patterns for each kind of record:

			By Whom		
	Yes	No	FSA or FS Staff (Not Cent. Off. St.)	Cen. Office St. (Alone & with FS Staff	Other Or No Answer
Balance Sheet	35	6	13	21	1
Income Statement	40	1	22	17	1
Food Ordered	41	0	27	8	6
Meals Sold	41	0	27	11	3
Periodic Inventory	39	2*	20	4	15

*These do perpetual inventory only.

The Central Office staff bookkeeper, secretary or business manager participate heavily in Balance Sheet and Income Statement record keeping. Central Office staff participation in the remaining records listed is light by comparison. Many FSAs did not understand the simple Balance Sheet and Income Statement taken from the United States Department of Agriculture's simplified Food Service accounting manual. Comments were made such as "I do some of these figures but not in that form." Because of their hesitant reactions it was not always clear when a person said yes to Balance Sheet and Income Statement that these records are actually kept or that the FSAs who keep either one of them understand their use. (See Appendix C for Income Statement examples.)

There was no hesitation by FSA when answering questions about food ordered, meals sold and periodic inventory. It was clear that each FSA has a sure grasp of how to keep and use these records. Central Office involvement here is minor.

A majority of FSAs do not do a perpetual inventory and many were not sure what was meant by this term.

Several FSAs did not know what was meant by meals per man hour. Others said that though they know how to compute this figure, they do not think the information is useful.

In all but a few instances all record keeping is centralized.

Though people are capable of keeping food ordered and meals sold inventory records, the integration of this information for use on the voucher seems to be a problem.

B. Findings from Analysis of Survey Variable Relationships

Except for the following conclusions, no significant patterns emerged concerning the relationships among the answers to the questions and people's backgrounds or district situation. For example, degree, non-degree,

size of district service type, geographic location did not seem to make a systematic difference in how Food Service programs operate.

1. There is a strong positive correlation betwen public relations activities and on-site in-service training. Q = .7* This relationship is statistically significant.

TABLE 1

Relationship Between Public Relations and In-Service Training

	NO PUBLIC RELATIONS		YES PUBLIC RELATIONS		TOTALS	
	#	%	#	%	#	%
YES IN-SERVICE	A 4		B 12		16	39%
NO IN-SERVICE	C 16		D 9		25	61%
TOTALS	20	49%	21	51%	41	100%

2. There is a small positive correlation between people who compute meals per man hour and people who have degrees or who have taken food service or management courses. Managers may have been taught to use this tool in courses they have taken. Q = .6 This relationship is statistically significant. (See Table A-1, page A-2.)

3. 74% (14 out of 19) of the people with degrees also do Public Relations. Again, a possible explanation for this is the inclusion of Public Relations value and techniques in their studies. Q = .5 This relationship is not statistically significant. (See Table A-2, page A-2.)

---

* Yules Q is a statistic which measures the correlation between variables which only have two values (yes or no, for example). See Table 1. The formula for Yules Q is $Q = \frac{(B-C) - (A-D)}{(B-C + (A-D)}$. A 95% confidence interval for Q is calculated by $Q \pm 1.96 \sqrt{\frac{(1-Q^2)\left[\frac{1}{A} + \frac{1}{B} + \frac{1}{C} + \frac{1}{D}\right]}{4}}$.

See James A. Davis, Elementary Survey Analysis, (Prentiss-Hall, N.J.) 1971.

4. In the nine school districts in which Food Service managers had no previous food service education or management experience, the average participation rate is 63%. The study sample average is 54.6%. Therefore, it cannot be assumed that previous education and experience are necessarily the reasons for high participation rates.

C. Summary

A majority of Food Service administrators are capable (able to manage a variety of areas such as menu planning, personnel supervision, food ordering--see Appendix B, Question 7), qualified (80% have food and nutrition degrees, courses or management experience--see Appendix B, Question 2) people who are devoted to their jobs (concerned about achieving goals and standards they set themselves--see Appendix B, Question 6). They have many major responsibilities among which accounting is only one. But, accounting seems to be a major problem and the activity in which they are least skilled. Most FSAs complain not about lack of staff but that the great amount of time they spend on paperwork prevents them from tending to their other responsibilities and reaching the goals they have set for themselves. In addition, they find it difficult to work under conditions where there is often little respect, understanding or communication from the people they serve.

SECTION II: PARTICIPATION AND COST STUDY

The Food Service operation is a complex system. In order to determine the effectiveness of the program for all who are involved--the people who manage, fund, and use the program, it was thought it would be desireable to identify major factors on which to judge the program's success. A review of the literature indicates three such factors: food quality, participation rate and cost. Within the scope of this study it was only feasible to analyze participation rate, labor cost and food cost.

One model was designed for the participation study and two for the cost study: a food cost model and labor cost model. Each model describes aspects of the school lunch program which affect either participation rate, labor cost or food cost. Generally a model is an abstraction from reality which tries to capture some aspects of a situation in order to provide a basic understanding of what is happening. For example, the participation model describes how changes in factors such as service type, Type A meal price, etc. (independent variables) affect participation rate (dependent variable).*

It is important to note that this methodology does not define causal relationships as in a controlled experiment. Instead, it indicates with a specific degree of certainty that a relationship exists between the independent and the dependent variables. For example, when Type A meal price (the independent variable) changes $.05 (a one unit change), participation rate (dependent variable) changes 1.65 percentage points. This estimate has a range of 1.4 to 2.6 percentage points. If this estimating process were repeated 100 times, 95 of those times participation rate would change by 1.4 to 2.6 percentage points for every $.05 change in Type A price. In addition, even though a model may be accurate for districts in general, it may not apply in a specific district.

Data for the two year period 1974/75 and 1975/76 was collected from a variety of sources for 84 of the 94 public school Food Service programs in the Southwestern Pennsylvania six county region. (See Appendix D for data sources. Ten districts did not respond to an information questionnaire and therefore had to be excluded from the study.)

---

*Least squares multivariant regression analysis was used to analyze each model. This statistical technique explores the relationship between the independent variables and the dependent variable in each model.

A. Participation Model Results (For use of participation model see Appendix E.)

Following are the final set of independent variables and the relationship of each to participation rate, the dependent variable; i.e. these are the specific relationships that resulted in the context of this model. The average participation rate is 56% and the standard deviation is 13% (percentage points). Participation rate was computed by dividing the average daily number of Type A meals by the daily adjusted enrollment. The adjusted enrollment includes lunch buildings only and deducts kindergarten students. (See Figure 1, page 10 for participation rate profile.)

Bulk Satellite (Variable #20) (See Appendix D for complete list and explanation of variables.)

Participation rate in satellite programs is eight percentage points lower than in unit programs and three percentage points lower than in mixed programs. The range for this estimate is 6 to 10 percentage points. Fifteen per cent of the programs are satellite.

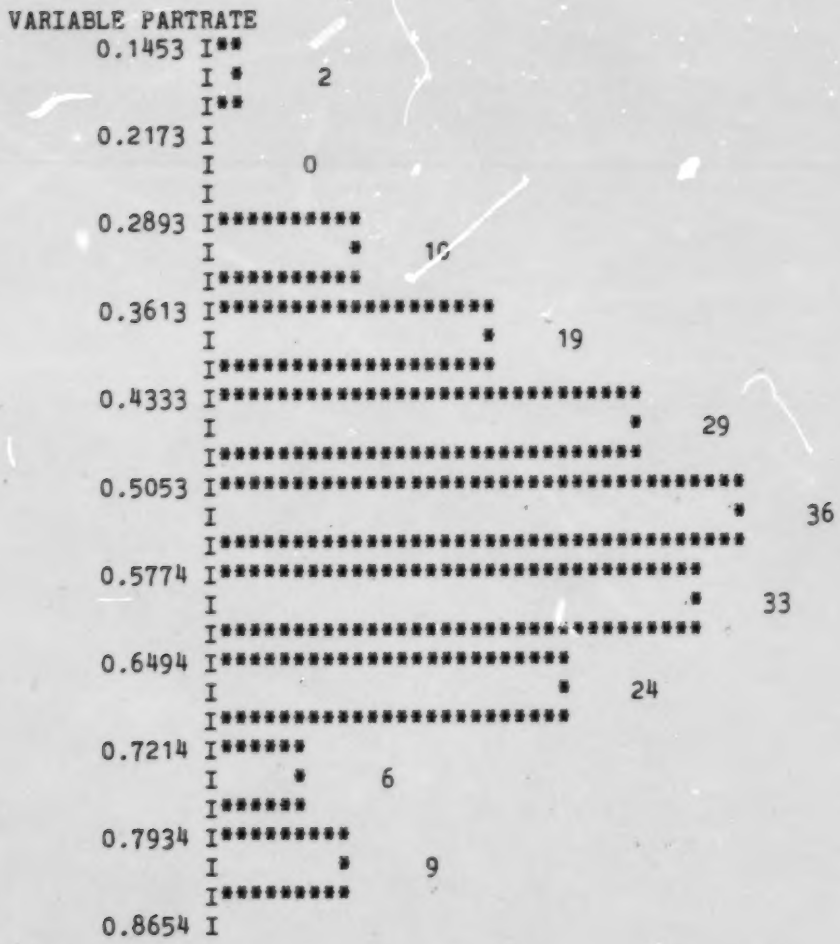
Mixed (#21)

Participation rate in mixed programs is five percentage points lower than in unit programs and three percentage points higher than in satellite programs. The range for the estimate is 4-6 percentage points. Fifty-two per cent of the programs are mixed.

Unit kitchen programs (32% of the programs) probably have a higher participation rate than mixed or satellite because of the effect of cooking food odors on the appetite and because menus can be varied to suit the tastes of the students in a particular building. Since mixed programs have unit kitchens, it is reasonable to assume that their participation would be higher than satellite programs which by their nature can have only one unit kitchen.

Figure 1

Participation Profile



Notice that 98 (58%) of 168 cases (2 years for 84 districts) had participation rates between 43% and 65%.

Elemstay (#43; Elementary closed lunch policy)

If a school district has a closed lunch policy for elementary students, its participation rate will be four percentage points higher than if it had an open lunch policy. The range for this estimate is 3-5 percentage points. Sixty-four per cent of the districts have a closed elementary lunch policy.

Midstay (#44; Middle/Jr. High School closed lunch policy)

If a school district has a closed lunch policy for Middle/Jr. High students, its participation rate will be five percentage points higher than if it had an open lunch policy. The range for this estimate is 2-8 percentage points. Ninety-two per cent of the districts have a closed Middle School/Jr. High lunch policy.

Highstay (#45; High School closed lunch policy)

If a school district has a closed lunch policy for High School students, its participation rate will be approximately four percentage points higher than if it had an open lunch policy. The range for this estimate is 2-6 percentage points. Ninety-two per cent of the districts have a closed High School lunch policy.*

Although the estimates for Middle/Jr. High and High School are five and four percentage points, because the two have a small correlation (i.e. in many cases districts have the same Middle School and High School policies) the actual effects of each could be slightly different. In other words, the actual effects of Midstay and Highstay could be 6% and 3% respectively or 4% and 5%.

---

* From the 1975/76 Pennsylvania Department of Education agreements secondary participation rate (percent secondary students who eat lunch of all secondary eligibles) was 53.4% and elementary participation rate was 57.0%.

A Price (#76)

A $.05 change in fully paid Type A meal price tends to change participation rate 1.65 percentage points. As the price increases, participation rate for fully paid Type A decreases and as price decreases participation increases. The range for this estimate is 1 to 2.3 percentage points. The mean fully paid Type A meal price is $.48. For example, if a district in which participation rate is 60% and Type A lunch price is $.40 raises its price to $.45, participation rate will drop to 58.35%. If 60% is equal to 200,000 meals served annually then 58.35% would equal approximately 192,555 meals, a decrease of 7,445 Type A fully paid meals annually.

In this same example, assuming that 26% of the 200,000 served are free and reduced Type A lunches, the remaining 148,000 fully paid lunches would total $59,200 (148,000 X .40). If fully paid participation decreases 7,445 meals to 140,555 meals annually, but charge goes up $.05 to $.45 then Type A fully paid revenues for that year would be $63,250 (140,555 X $.45), an increase of $4,050 over the preceding year.

	Before	After
Annual Meals	200,000	192,555
Type A Price	$.40	$.45
Revenues	148,200 fully paid X $.40=$59,200	140,555 X $.45=$63,250
Free and Reduced Meals	52,000 (26% of 200,000)	52,000
Revenue Increase		4,050 ($63,250-$59,200)

Freepercent (#86)

For every ten percentage point change in the free and reduced percent of total Type A lunches in a district, participation rate changes by 1.6 percentage points. The range for this estimate is 1.2 - 2.0 points. The mean free per cent is 26%.

Alaratio (#77; See Figure 2, page 14)

There is a negative relationship between Type A participation rate and a la carte sales. The following graph shows that as the ratio of a la carte meals to Type A meals increases, participation rate decreases. However, it is important to note that, in contrast to other variables discussed so far, the relative rates of change in this instance are not on a one unit to one unit change basis. In other words, as a la carte ratio increases, participation rate decreases at a slower rate. Therefore, increases in a la carte sales (in comparison to Type A sales) have a bigger impact on decreasing participation rate when the a la carte ratio is relatively small. When a la carte ratio is relatively large, the impact is much smaller. For example, as a la carte ratio increases from .3 to .4, participation rate decreases by 3 percentage points; however, when a la carte ratio increases from .7 to .8, participation rate only decreases by 1 percentage point.

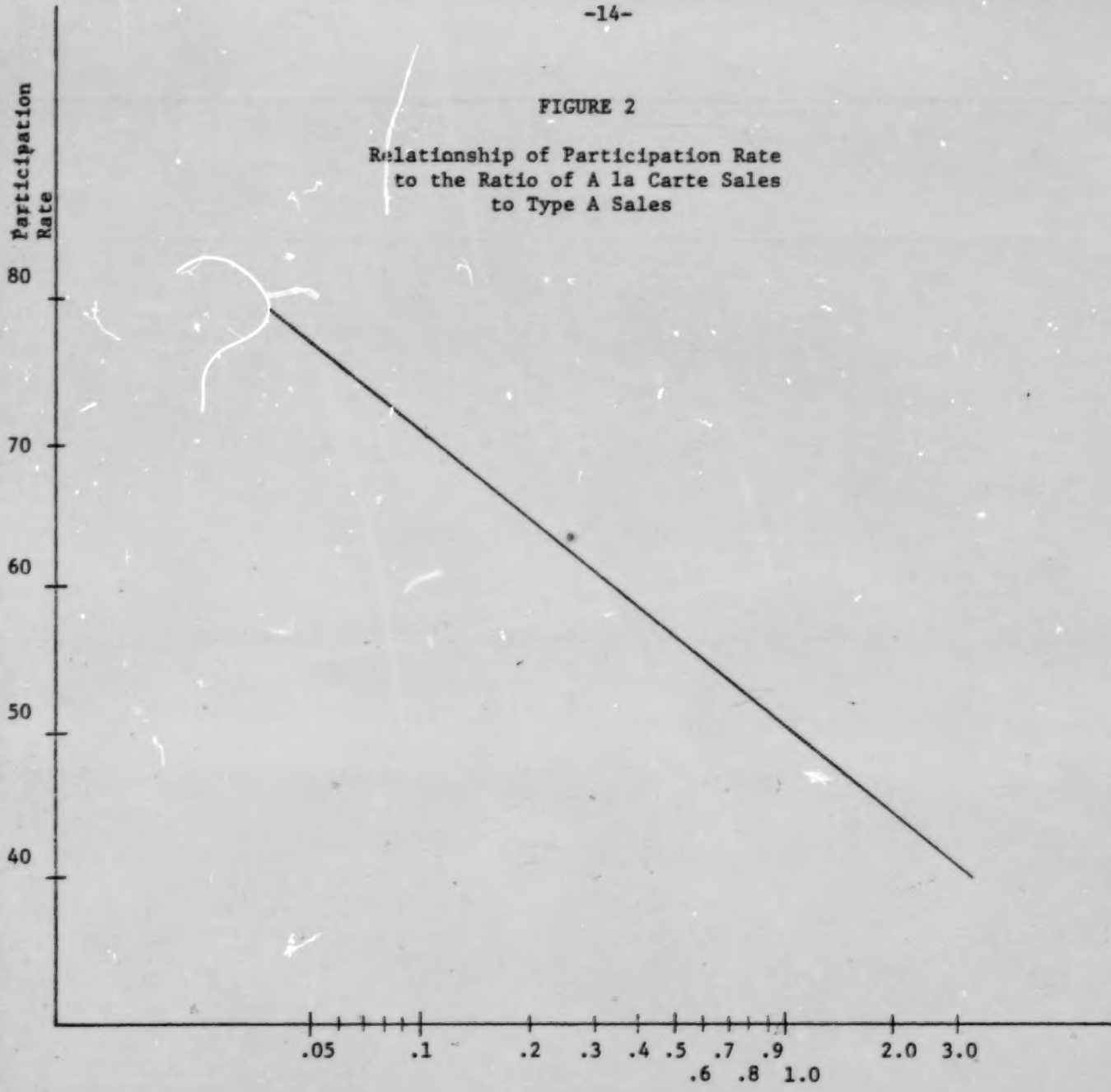
Technical note: The relationship between the two variables is a curvilinear one. The linear relationship shown in Figure 2 has been derived by graphing alaratio against participation rate on semi-logarithmic graph paper. The natural logarithm of a la carte ratio was used in the participation rate model so that the relationship between a la carte ratio and participation would be linear. This transformation of a la carte ratio was undertaken to clarify the relationship between the two variables and facilitate the accuracy of the regression analysis. For a discussion of the revenue implications of log alaratio, see Appendix F.

B. Labor Cost Model Results (For use of labor cost model, see Appendix E.)

Following are the final set of independent variables and the relationship of each to labor cost per meal, the dependent variable; i.e. these are the specific relationships that resulted in the context of this model. The mean labor cost per meal is $.29 with a standard deviation of $.07. Labor cost per meal was computed by dividing total annual labor costs by number of

FIGURE 2

Relationship of Participation Rate
to the Ratio of A la Carte Sales
to Type A Sales



all daily meals. All daily meals was computed by dividing total Type A meals + a la carte meals + adult meals by number days per year lunch served. (See Figure 3, page 16 for labor cost profile.)

Year (Variable #2)

Labor costs were approximately 4% higher in 1975/76 than they were in 1974/75, the previous year. The rise can probably be attributed to normal yearly increases in wage rates and, in addition, to the fact that FSAs were being urged to claim costs for reimbursement in 75/76 to which they had not previously realized they were entitled, e.g. custodial and maintenance time spent in the lunchroom.

Degree (#23)

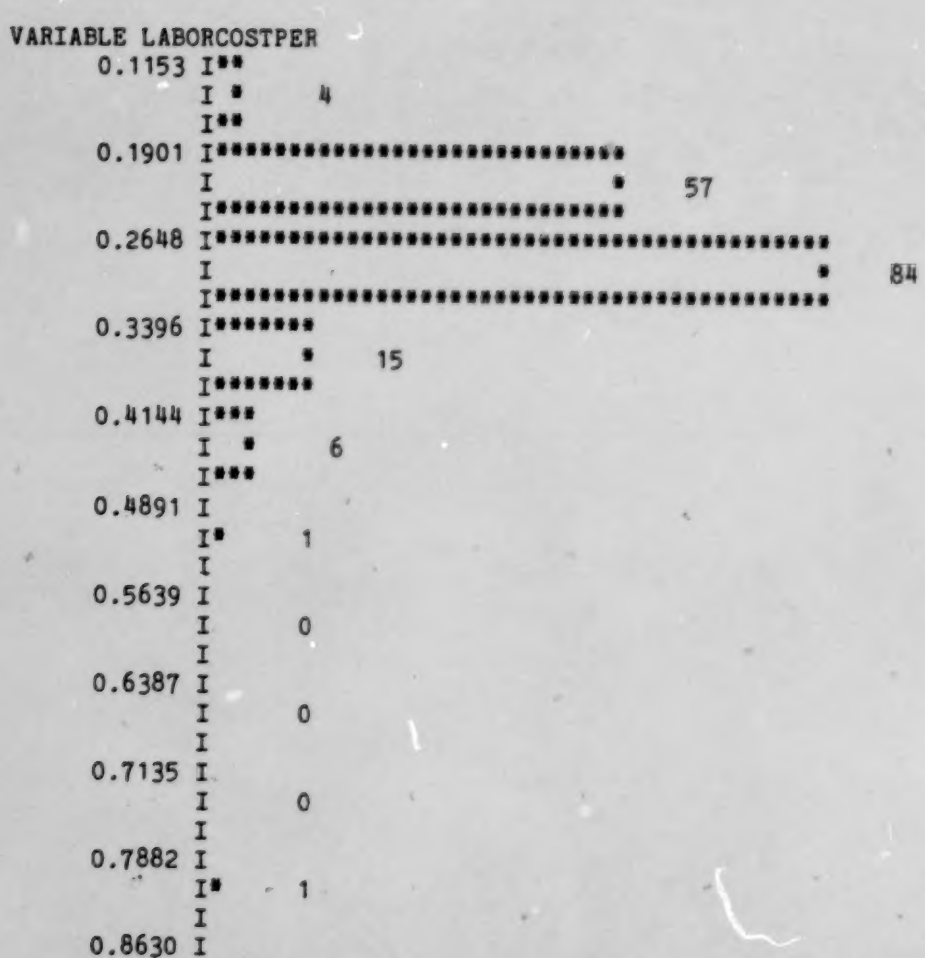
Labor cost per meal is approximately $.02 higher in districts where the FSA has a degree in Food and Nutrition or Food Management than in districts where the FSA does not have one of these degrees. Thirty-four (40%) of the 84 FSAs in the study districts have degrees. It is not probable that the degree people cause high labor costs. Twenty-two of these FSAs work in Allegheny County school districts where labor rates would tend to be higher than in the remaining less urban counties of the study sample. In addition, the mean population is larger in districts headed by degree FSAs than in non-degree districts. Larger school districts tend to hire degree people.

A Choice (#30. See Table E-3, page E-7 for A choice and a la carte choice breakdown.)

Labor cost per meal is approximately $.02 higher when Type A choice is offered for lunch. The range of this estimate is $.013 to $.027. For example, in a district which serves 350,000 Type A meals a year, labor costs could go up approximately $7,000 if Type A choice policy were initiated. Sixty per cent of the districts offer Type A choice.

Figure 3

Labor Cost Profile



141 (84%) of 168 cases have labor costs per meal between $.19 and $.34.
22 cases (13%) had labor cost per meal between $.34 and $.51.

Since A Choice is offered in districts of varied size and geographic area, urban wage rates cannot be considered the underlying cause of the relationship. It is probable that additional labor hours are used when A Choice is offered.

Efsateach (#47; FSA teaches nutrition to elementary school classes)

Labor costs tend to be $.02 lower in districts where the FSA teaches nutrition in elementary school classes than in districts where the FSA does not engage in this activity. Teaching would not directly affect labor costs. No other commonality such as degree, size of district or location could be found among the nineteen FSAs who engaged in the practice.

Income (#62)

There is a $.02 change in labor cost per meal for every $1000 change in school district per capita income. The range for this estimate is $.016-$.024. The mean per capita income is $3591.00. The probable reason for this relationship is that labor rates increase as district per capita income increases.

Freepercent (#86)

A 5% change in free and reduced per cent of total meals changes labor costs $.003. The range for this estimate is $.002 to $.004. The mean free per cent is .25. For example, if a district in which 25% (675) of its daily 2700 meals are free and reduced increases its daily free and reduced to 30% (an additional 135 daily meals), then the labor cost per meal increases $.003--a total increase of $729 for a 180 day lunch year. (180 x 135 x $.003) A 5% increase in free and reduced per cent can also occur if the number of fully paid lunches decreases or if fully paid lunches decrease and free and reduced increase.

Unionpercent (#87)

A 10% change in per cent of union employees of total employees changes labor costs per meal $.002. The range for this estimate is $.001 to $.003. The mean union per cent of total employees is 47 per cent. For example, if a district in which 400,000 meals are served annually and 50% of its employees are union members increases to 60% union members (a 10% increase), then total labor cost per year will increase $800 (400,000 X .002). It is reasonable to assume that union wages are generally higher than non-union wages.

Manhours per meal (#90)

A one hour increase in labor raises meal cost $1.88. The estimate has a range of $1.66 to $2.11. The mean is .07 hours or 4.5 minutes per meal. Therefore, 13.3 meals are produced by one labor hour. The mean labor cost per meal is $.29. Both labor hours per day and total labor costs were used in this computation.* Actual wage rates were not gathered.

C. Food Cost Model Results (For use of food cost model see Appendix E.)

Following are the final set of independent variables and the relationship of each to food cost, the dependent variable. The mean food cost per meal is $.36. Food cost per meal was computed by dividing total food costs by total number of daily meals. (See Figure 4, page 19 for food cost profile.)

Nreportother (#69)

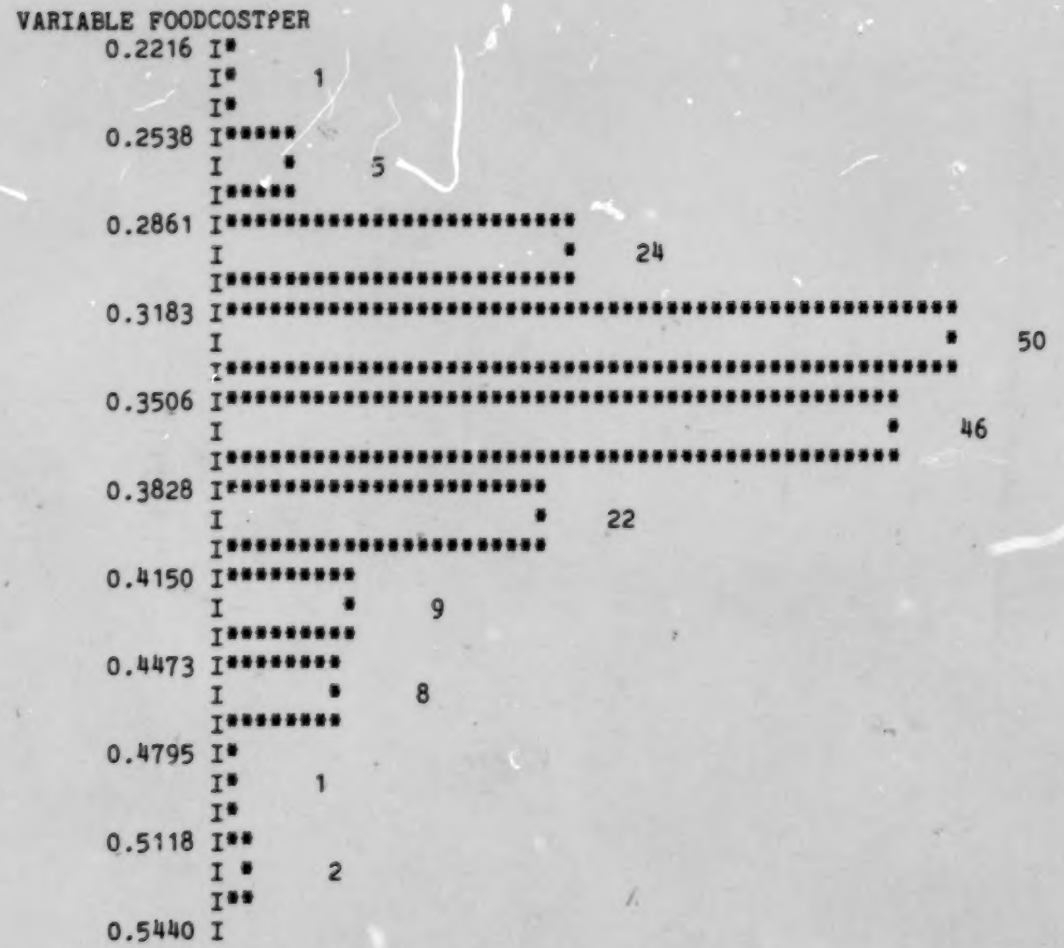
Food cost per meal is approximately $.02 higher in districts that did not itemize all "other costs" for 1974/75 and 1975/76 such as utilities or repairs, (on an information survey sent to them) than in those districts where the FSA listed these costs. The range for the estimate is $.015 to $.025. This variable was used as an indicator of managerial capability and knowledge.

---

* Labor hours per day includes only those people who prepare and serve food, collect tickets and money, dishwashers and truck drivers. Total labor costs include all Food Service labor costs as appear on the voucher.

Figure 4

Food Cost Profile



Notice that 96 (57%) of 168 cases had food costs per meal between approximately $.32 and $.35. 20 cases (12%) had food costs per meal betwen $.415 and $.54.

Possible reasons for not responding to this question is that the FSA is not responsible for the voucher or does not keep records that are easily available. The fact that food costs tend to be high in these districts may be another indication of less than efficient management. This finding has implications for the uses of management information by the FSA. (See Table E-3, page E-7 for other costs as part of total program costs.)

Genpercent (#84; per cent of total program costs paid by the General Fund)

For every 10% change in General Fund per cent food cost per meal changes $.009. The range for this estimate is $.005-$.013. The mean General Fund per cent is .14. For example, in a district which serves 483,000 meals (the sample mean) annually, a food cost per meal increase of $.009 would total $4347. It is not clear whether increased General Fund support is given to enable the FSA, for example, to expand the food program or whether it is needed, perhaps, for use as a subsidy.

Secpercent (#88; per cent secondary lunches of total lunches)

A 5% change in secondary per cent changes food cost per meal $.002. The range for this estimate is $.001 to $.003. The mean secondary per cent is 55%. For example, if the mean number of daily meals is 2684, a 5% increase in secondary meals would increase total annual food cost $966.00 (2684 x 180 x $.002). It is logical that secondary per cent increase would cause a food cost increase because secondary students have larger appetites than elementary students and are generally served larger portions.

Daily Meals

A decrease of 300 daily meals tends to increase food cost per meal $.003. And conversely, an increase in number of daily meals tends to decrease food cost per meal. The range for this estimate is $.002 to $.004. A possible reason for this relationship is the ability of larger districts to buy quantities of food at more reasonable prices than smaller districts.

D. Variance of Each Model

The participation model accounts for 61% of the variation in the dependent variable. Although the range for participation rate residuals* is -16% to +15% for 166 data points (two years for one district were removed because of extremely low participation rate), eighty-one per cent of these points fall within -10% to +10%. In other words, the model predicted a participation rate less than 10% different than the actual participation rate in those cases.

The labor cost model accounts for 50% of the variation in the dependent variable. The range for labor cost residuals is $-.14 to $+.09 for 167 data points (one year for one district was removed because of high labor costs). Eighty per cent of the points fall within $-.05 to $+.05.

The food cost model accounts for 31% of the variation in the dependent variable. The range for food cost residuals is $-.09 to $+.10 for 168 data points. Eighty-five per cent of these points fall within $-.05 to $+.05.

For each model there were variables that were not included which may or may not have had a significant effect. Some of these were: food quality, food appeal, vending machines, proximity to fast food chains, public relations and hours food service available for the participation model; kitchen space, equipment, in-service training, safety practices for the labor model; storage space, cooperative buying, waste, and inventory practices for the food model. In particular, the low per cent of variation accounted for in the food model is possibly due to missing information such as stockpiling of donated foods, buying food when expected needed commodities are not available, and unauthorized food removal. Although information was collected on variables that were thought important, there was some information it was not feasible to collect in the scope of this study.

---

* Residuals are the difference between the actual values and those which are predicted by the model.

E. Interesting Variable Correlations

Type A price and income have a positive correlation. Since labor costs increase as school district income increases, it is natural that the charge for Type A meal would also increase. In addition, it can be assumed that the charge may be based on ability to pay.

There is a strong positive correlation between total General Fund contribution and per cent union employees.

There is a positive relationship between a la carte meals and degree. This suggests that degree people are either apt to initiate an a la carte policy in districts where they work, or to work in districts in which a la carte policy exists and conversely that non-degree people are less apt to initiate an a la carte policy or to work in districts which have an a la carte policy. Data for a longer period of time would be necessary to determine more about this relationship.

There is a negative relationship between elementary price and unit kitchens. Charge for Type A lunch is less in districts with unit kitchen programs than in other types of programs.

F. Study Procedure

1. A model was designed which would relate participation rate, per meal and labor cost per meal to the most significant variables that effect them. (See Appendix D for complete list of variables.) Some of the variable categories are open or closed lunch, meal charge, a la carte program, menu choice, service type--all policy variables. Other categories are per capita income, size of district, sanitation violations (for Allegheny County only), per cent free and reduced meals, FSA background and year.

2. Variables which were highly correlated with each other were removed. For example, if two variables were highly correlated, the more significant one was kept and the other removed.

3. One school district in the participation model which had an extremely low participation rate for both years was removed. One year in a district in the labor cost model was removed because of extremely high labor costs.

4. In a series of regression runs each variable which had an insignificant relationship to participation rate labor cost or food cost or which did not make sense was removed. This procedure was followed for each model until a set of variables which had significant coefficients remained.

SECTION III: THE MANAGEMENT STUDY AND THE MOCELS

Three additional models were designed using the final set of independent variables from the participation food and labor models plus significant independent variables from the management study, such as public relations, in-service training, and Superintendent involvement. The dependent variables remained the same.

Since only 38 management study districts could be used in these final models (3 of the 41 did not answer a data questionnaire), it was realized that the findings would not be as robust as if the same information had been available for all 84 districts. Nevertheless, the findings can be looked at qualitatively as indications of additional factors which may be related to the dependent variables.

Only one variable from the management study had a relationship to participation rate. In the 15 districts where the FSA said that the Superintendent was not involved in the lunch program, participation rate tended to be higher than in districts where the Superintendent was involved. One possible explanation for this is that when the lunch program is functioning effectively, the Superintendent feels no need to participate in the lunch program. As previously mentioned according to FSAs, the Superintendent's major role when he or she is involved is consulting and supervising.

Two management study variables had a relation to food cost: storage space and perpetual inventory. In districts where storage space was rated too little by FSAs (see Appendix B, Question 4a), food cost per meal tended to be higher than in districts where storage space was not considered too little. (60% of the districts reported that storage space was considered too little). In addition, food costs tend to be higher in districts where the FSA does not have a perpetual inventory system (see Appendix B, Question 14e). More information about storage space and perpetual inventory is needed to clarify their relationship to food cost. Lack of storage space may mean that FSAs can not take advantage of good food buys or accept the USDA donated foods to which they are entitled. FSAs who have a perpetual inventory system (16 of the 37 or 39%) can more easily keep a check on pilferage and have a better feel of inventory flow and needs than FSAs who have only periodic inventory information.

None of the management study variables had a relationship to labor costs.

SECTION IV: RECOMMENDATIONS

1. Labor Cost. Labor productivity is a major cost factor and man hours per meal is a necessary management tool that should be used by all FSAs to measure labor productivity. For example, a district which serves 4,000 daily meals and uses 300 labor hours daily has a productivity of 13.3 meals per man hour. If productivity increases to 14.5 meals per man hour, 24 fewer hours would produce the 4,000 meals.
2. Food Cost. FSAs should consider cooperative buying with other school districts in order to keep food costs down. Small school districts do not use the quantity that assures lower prices.

   FSAs should make sure through competitive bidding that they get quality food at the lowest possible price.

   A perpetual inventory system is a management tool that FSAs could adopt for better supervision of inventory.

3. Policy Decisions. Careful consideration of the following policy decisions should be made by FSAs and school district administrators and School Boards:

Service type (p. 9) Participation is approximately eight percentage points higher in unit kitchen programs than in satellite programs and five percentage points higher than in mixed programs.

Lunch price (p. 12) A $.05 increase in Type A fully paid lunch price tends to decrease participation 1.65 percentage points but will increase revenues.

Size of a la carte program (p. 13) Type A participation decreases as a la carte increases. But that relationship does not continue at the same rate as the a la carte ratio increases. Examining the revenues for a typical district, (see Table F-1, page F-1), the district should avoid having an a la carte ratio of around .3 or 30%. Revenues will be the greatest when a la carte ratio is very small (.1 or less) or large (.4 or greater). See Appendix F for a fuller discussion of the revenue implications of changes in a la carte ratio as the guideline for selecting a la carte ratio depends upon a district's program size, Type A meal price, participation rate, and percentage of free and reduced lunches.

Open or closed lunch policy (p. 11) Participation rate tends to be four percentage points higher for elementary students, five percentage points higher for middle or Jr. High students, and four percentage points higher for high school students in districts which have a closed lunch policy than if they had an open lunch policy.

Type A Choice (p. 15) Labor cost per meal is approximately $.02 higher when Type A Choice is offered for lunch. For example,

in a district which serves 350,000 Type A meals a year labor costs could increase $7,000 if Type A choice policy were initiated.

4. Human Relations. Every effort should be made by school administrators to help establish a better relationship between FSAs and Superintendents, Boards of Education, Principals, teachers, students and parents.

   FSAs should be involved when polciy decisions are being considered which affect the Food Service program since their input can be invaluable and their cooperation is necessary to implement program changes. In addition, several districts have found it beneficial to include the FSA on their management team.

5. In-service Training. In order to run a successful program, FSAs need in-service training in bookkeeping and accounting procedures; e.g. income statement. The piecemeal approach that exists in many districts is not good business practice. For example, often the FSA keeps food ordered and food sold records and the business office keeps income statements and balance sheets which the FSA may not see or understand.

6. Training of Future FSAs. Because a high per cent of FSAs (40% of the management survey sample) will have reached retirement age in the next ten years, attention should be paid to the quality of training of future FSAs in degree programs and in the district.

7. Claiming Costs. Districts in which cost of producing a lunch falls below full reimbursement levels for Type A meals should be sure that they claim for reimbursement all costs to which they are entitled. Although the vast majority of school districts were eligible to receive the highest possible reimbursement for all Type A meals, 11 districts were not eligible for fully paid, nor 17 for reduced. Four of the districts in the case of fully paid meals and five of

the districts in the case of reduced meals did not claim all "other" costs such as utilities, repairs, to which they are entitled.

Guidelines were not developed for management information uses because, as was determined in the first part of the study, people were already using the types of reports such as inventory records and income statements which follow sound management practices. In addition, in most cases FSAs have bookkeeping and clerical staff support. Apparent problems are the effective understanding of the use of those records. Improvements in this area cannot be achieved by a blanket recommendation in this report but would require a district by district assessment of FSA skills especially since there is such a variety of FSA education and experience. The assessment would be used as a basis for appropriate in-service training.

APPENDIX A

Method used to Analyze Survey

1. All interview answers were reviewed by going through each question by school district.
2. Responses that were not yes or no were classified into major categories (see Appendix B, Questions 9 and 11).
3. Responses to each question and its subparts were tallied.
4. Relationships were looked for between each of the 331 variables. These included background variables such as degree, service type and all subparts to questions.

TABLE A-1

Relationship Between Degree and Meals Per Man Hour

	No Meals Per man hour		Yes Meals Per man hour		Totals	
	#	%	#	%	#	%
Degree	A 10		B 9		19	46%
Non Degree	C 17		D 5		22	54%
Totals	27	66%	14	34%	41	100%

TABLE A-2

Relationship Between Degree and Public Relations

	No Public Relations		Yes Public Relations		Totals	
	#	%	#	%	#	%
Degree	A 5		B 14		19	46%
Non Degree	C 15		D 7		22	54%
Totals	20	49%	21	51%	41	100%

APPENDIX B

Survey Questionnaire and Summary of Responses

PART I PROFILE OF THE SAMPLE

Background of Food Service Administrator (FSA)

	Sample (41)	Total (94)
Degree	19 - 46%	37 - 39%
Non Degree	22 - 54%	44 - 47%
Management Company	8 - 20% (2 included with degree)	13 - 14%

Age (Estimated by the interviewer)

20 - 24	1 - 2%
25 - 29	9 - 22%
30 - 34	3 - 7%
35 - 39	4 - 10%
40 - 44	2 - 5%
45 - 49	4 - 10%
50 - 54	2 - 5%
55 - 60	7 - 17%
61 - 64	9 - 22%

Type of Service

Unit Kitchens only	12 - 29%	29 - 31%
Satellite Only	6 - 15%	18 - 19%
Mixed (Satellite & Unit)	23 - 56%	47 - 50%

Number Lunches Served Daily (Program Size)

500-999	4 - 10%
1000-1499	12 - 29%
1500-1999	5 - 12%
2000-2499	4 - 10%
2500-2999	6 - 15%
3000-3499	4 - 10%
3500-3999	3 - 7%
4000-5000	3 - 7%

Participation Rate Average 54.6%

Number School Districts with Lunch Programs in Each County

Fayette	3	6
Greene	2	5
Washington	6	14
Allegheny	15	37
Westmoreland	7	17
Beaver	9	15

PART II ANSWERS TO THE QUESTIONNAIRE

Q 1 How long have you managed or had the responsibility for the Food Service Program in your district?

Answers ranged from one to twenty-five years. The average number of years was seven. Approximately 40% (16 of the 41) of the FSAs in the sample will have reached retirement age in the next 10 years. This has implications for the future of the program. As in the past, the future FSAs will come from degree programs, kitchen management, or management companies. Because there is such a high per cent who would be expected to retire in the next 10 years, quality of training in degree programs and in the district is likely to have a substantial effect on school lunch in Pennsylvania.

Q 2 What was your background prior to your present job that relates to Food Service?

Education:

Degree	Bachelor Food & Nutrition	14 - 34%
	Bachelor Management	5 - 12%
Courses	Food and Nutrition, Management Accounting	13 - 32%

Job Experience:

Management	25 - 61%
Cook	10 - 24%
No education or experience	5 - 12%
Programs headed by people with Degrees, Courses, Management Experience (some people fit into more than one of these categories)	32 - 80%
Programs Headed by People with no Degrees, Courses or Management Experience	9 - 22%

Q 3 How would you rate your kitchen space?

a. too little	14 - 34%
b. too much	1 - 2%
c. about right	30 - 70%

Q 4 How would you rate your storage space?

a. too little	24 - 59%
b. too much	1 - 2%
c. about right	20 - 49%

Q 5 How would you rate your equipment?

a. too little	10 - 24%
b. too much	2 - 5%
c. about right	33 - 80%

(Note - Several people gave more than one answer to questions 3, 4 and 5 due to differences in kitchens in each district)

A majority of the facilities visited were no more than ten years old and many older facilities were in the process of being enlarged or remodeled. Nevertheless, several Food Service administrators (FSAs) complained that the "experts" hired by school districts to plan kitchens do not consult them. Therefore, costly mistakes are made in efficient use of space and purchase of equipment.

In addition, the rapid growth of the federal commodity program has created a food storage problem for many FSAs. Lockers for frozen foods have to be rented and places for dry food found in already overcrowded storage space. Scarce funds have to be spent on locker rent and time and funds spent on pick up and delivery of food not stored on the kitchen premises.

Q 6 What are the goals or objectives of the Food Service Program in your district?

Nutrition Education	36	88%
Increase Participation	20	49%
Decrease Costs	17	41%
Increase Efficiency	6	15%
Increase Food Appeal	5	12%

In this open ended question a majority of FSAs claimed similar program objectives. They also admitted their failings in meeting their stated goals and carrying out their responsibilities. Answers to this question revealed their frustration at not being able to perform at a higher level. Lack of time was the reason most often given.

Q 7 What are your major responsibilities?

	Yes		No	
a. Making recommendations for hiring personnel	34	83%	6	15%

Most FSAs are satisfied with typical school district hiring procedures in which the Board of Education accepts the FSA's recommendations. But many complained that too often Board of Education decisions are politically motivated. The FSA is forced to accept Food Service employees who lack necessary skills instead of hiring substitutes who have been training on the job.

	Yes		No	
b. Accounting	34	83%	6	15%

No one asked what was meant by accounting yet many FSAs are not responsible for various Food Service records such as Balance Sheet and Income Statement. A large majority answered yes because each program manager is responsible for records of some kind.

Appendix B (continued)

	Yes		No	
c. Menu Planning	35	85%	5	12%

There is no question that menu planning is solely the responsibility of the FSA with no input from the Board of Education or the Central Office Administration.

	Yes		No	
d. Supervising persons responsible for kitchen operations in each school	36	88%	4	10%

This, like menu planning is the sole responsibility of the FSA. But, there were many complaints that because of time constraints it was impossible to visit each district kitchen often enough to satisfy the FSA's standards of supervision. Therefore, the FSA must rely on the ability of the people they hire as kitchen managers. Meetings with kitchen managers and kitchen staff are rare. Only 16 FSAs have in-service training programs once a year, twice a year and monthly.

	Yes		No	
e. Keeping informed about new ideas in Food Service	34	83%	6	15%

Though a majority answered yes, many people answered tentatively as though this was not an important priority among their many duties.

	Yes		No	
f.1 Purchasing Food	35	85%	4	12%

This responsibility belongs to the FSA. But, here again, as in 7a, members of the Board of Education sometimes pressure the FSA to buy food from purveyors the Board members choose rather than leaving the choice to the FSA. In these cases, the FSA is prevented from searching for quality and price.

	Yes		No	
f.2 Purchasing Equipment	35	85%	4	12%

FSAs do not have complete responsibility for purchase of equipment although recommendations come from them. They need Board of Education approval for large purchases. They often make small purchases ($100 - $1,000) on their own.

g. Other

Question 7 covered what most FSAs consider their major responsibilities, but 20 (48%) have additional duties. Most often mentioned were public relations, nutrition education, union negotiations and banquets.

Note: Most of the negative answers to Question 7 were given by six school districts which are unusual because they do not have one particular person designated as FSA on their staffs.

Q 8 Who is your immediate supervisor?

Superintendent	21
Business Manager	11
Assistant Superintendent and Management Company district Managers	8

In districts where the management company district manager is the supervisor, this duty is usually shared with either the Business Manager or the Assistant Superintendent.

In 20 districts, although the Superintendent or Business Manager is the designated supervisor, that person does not actually engage in supervising activities. The FSAs in these districts operate quite independently.

Q 9 Are the following people involved in your Food Service Program? How?

		Yes		No	
a. 1.	Secretary	30	73%	11	27%
	Your own	24	80%	(of 30)	
	Central office	5	16%		
	Part-time	3	10%		
	Type	25	83%		
	Bookkeeping/Accounting	16	53%		
	Clerical	19	63%		
a. 2.	Building Secretaries	23	56%	18	44%
	Clerical	21	91%	(of 23)	
	Type	4	17%		
b.	Clerk	12	29%	29	71%
c.	Bookkeeper	12	29%	29	71%
	Your own (2 part-time)	7	58%	(of 12)	
	Central office	5	42%		
d.	Business Manager	17	41%	24	59%
	Bookkeeping/Accounting	11	69%	(of 17)	
	Advice	9	53%		
	Liaison with Board	6	35%		
	Not on staff	11	27%		
e.	Superintendent	26	63%	15	37%
	Supervision and Advice & Consultation	20	62%	(of 26)	
	Communication with the public concerning the Food Service Program and visits to lunchroom	10	38%		
	No answer	2			
f.	Board of Education	21	51%	20	49%
	Mandated Functions (For example, approval of purchases and personnel)	20	95%	(of 21)	
	Have appointed representative	9	68%	16	39%
g. 1.	Elementary Principals	28	68%	16	39%
	Note (several districts indicated both yes & no)				
	Required functions For example, lunch room supervision, scheduling lunch periods.	15	53%	(of 28)	
	Open communication with FSA and kitchen employees	12	43%		
	Other	3	11%		

		Yes		No	
g. 2	Secondary Principals	27	66%	17	41%
	Required functions	14	52%	(of 27)	
	Open Communication with FSA & Kitchen employees	12	43%		
	Other	6	22%		
h. 1.	Elementary Teachers	22	54%		
	Lunch room monitors	9	41%	(of 22)	
	Nutrition Education	7	32%		
	Clerical	9	41%		
	Other	5	23%		
h. 2.	Secondary Teachers	24	58%	18	44%
	Lunch room monitors	13	54%	(of 24)	
	Nutrition Education	6	25%		
	Clerical	4	17%		
	Other	3	13%		
i.	Parents	14	34%	27	66%
	PTA invites FSA to speak	12	86%	(of 14)	
	Other	2	14%		
j. 1.	Elementary Students	8	20%	32	78%
	Lunch room communication and meetings with FSA	8	100%		
j. 2.	Secondary Students	23	56%	18	44%
	Meetings with FSA	19	83%	(of 23)	
	Lunch room communication with FSA and employees	10	43%		
k	Other (includes custodians, maintenance men, truck drivers, Management Company staff)	23	56%	18	44%

Q 10 a. What is the Food Service background of each person responsible for each kitchen operation in your district?

In 30 school districts the kitchen managers came "up through the ranks" in the school district kitchens. The others had not worked in school district kitchens

b. Are the kitchen employees in your district union or non-union?

Union		Non-union	
23	56%	18	14%

Q 11 Do you have any communication or Public Relations activities concerning your Food Service Program?

Yes		No	
21	51%	20	49%

P. R. activities included printing attractive menus which sometimes include nutrition education information, Food Service Program articles and pictures in newspapers, speeches to local groups and celebration of holidays. Many people who do not engage in P. R. activities feel that they should but do not have the time.

Q 12 Do the Food Service employees in your district receive in-service training?

	Yes		No	
a. On site	16	14%	24	60%

When program started?--On site in-service programs were usually initiated by the FSA administrators when they were hired.

How often?--The answers were evenly divided between once a year, twice a year and monthly, sometimes with the entire staff and sometimes with kitchen managers only.

Will you continue them?--Each FSA answered that he or she would continue to have them. Many of the people who answered no gave the impression that on-the-job training employees receive is sufficient.

	Yes		No	
b. Off site	23	59%	16	41%

School district pay for time?--School districts rarely pay for employees' time at off site meetings. But 13 of the 23 school districts which participate in off-site training pay for one or more of their employees transportation, accomodation and registration costs.

Q 13 How often does the Pennsylvania Department of Education area consultant visit your district?--Answers to this question were not meaningful enough to be tallied.Although it was clear which visits were made for administrative review, it was difficult to distinguish visits made to aid districts having management problems from visits normally made for consultation about such things as purchasing new equipment.

Q 14 Are the following records kept?

	Yes		No	
a. Balance Sheet	35	85%	6	15%
By whom?				
FSA	16	39%		
Food Service Staff	8	20%		
Central Office Staff	22	54%		
Other	5	12%		
Decentralized	0			
b. Income Statement	40	98%	1	2%
By whom?				
FSA	21	51%		
Food Service Staff	9	22%		
Central Office Staff	17	41%		
Other	4	5%		
Decentralized	1	2%		
c. Food Ordered	41	100%		
By whom?				
FSA	29	71%		
Food Service Staff	6	15%		
Central Office Staff	8	20%		
Each kitchen manager	12	29%		
Management company staff	4	10%		

		Yes		No	
	Decentralized	3	7%		
d.	Meals Sold	41	100%		
	By whom?				
	FSA	24	59%		
	Central Office Staff	12	59%		
	Each kitchen manager	26	49%		
	Management Company staff	3	7%		
	Other	2	5%		
	Decentralized	1	2%		
e.1	Inventory Control Perpetual	16	39%	25	61%
	By whom?				
	FSA and/or each kitchen manager	9			
	Answer not recorded	7			
	Decentralized	0			
2	Inventory Control Periodic	39	95%	2	5%
	By whom?				
	FSA	19	46%		
	Food Service staff	6	15%		
	Central Office Staff	4	10%		
	Each Kitchen Manager	23	56%		
	Decentralized	2	5%		
f.	Meals per Man Hour	14	34%	27	66%

Q 15 For the following items we would like to know first, if the school district or if the lunch program fund pays the cost and, second, if these items are claimed for reimbursement.

			WHO PAYS		ON VOUCHER	
		Number	General Fund	Cafeteria Fund	Yes	No
a.	Benefits	39	24 - 62%	20 - 51%	39-100%	0
b.	Food Service Administrator	39	16 - 46%	19 - 54%	35-100%	0
c.	Secretary	37	15 - 50%	15 - 50%	28-93%	2-6%
d.	Custodian	38	30 - 79%	10 - 26%	34-89%	3-8%
e.	Truck Driver	39	21 - 54%	18 - 46%	31-84%	6-16%
f.	Utilities	39	36 - 92%	3 - 8%	34-92%	3-8%
g.	Expendables	39	2 - 5%	37 - 95%	38-97%	1-3%
h.	Consumables	39	5 - 13%	36 - 92%	38-97%	1-3%

		Number	General Fund	Cafeteria Fund	ON VOUCHER Yes	No
i.	Purchase & Depreciation of Equipment	35	26 - 72%	20 - 56%	35-90%	4-10%
j.	Repairs	39	8 - 21%	33 - 85%	37-95%	2-8%
k.	Laundry	Not Used -- Majority Do Own Laundry				
l.	Garbage Removal	39	28 - 72%	10 - 26%	32-84%	5-13%
m.	Exterminator	37	13 - 35%	20 - 54%	27-73%	6-16%

Note: Often, both funds share an expense

Items a, b, c and e, all labor costs, are evenly divided between General Fund and Cafeteria Fund. The reason for this division is not clear. Items d, f, and l, more often supported by General Fund, are continuing system wide school district costs. Computing the Food Service share of these costs would increase bookkeeping. Items g, h, j, and m, paid for more often by the Cafeteria Fund, are solely Food Service expenses.

A majority of school districts claim Question 15 items on their reimbursement vouchers. Many of those who neglected to claim certain items said that they had "not gotten around to doing it yet," but that they planned to do this. A few people were happy to have been reminded.

Q 16 How do you estimate the number eligible for free and reduced lunch?

Use number of approved applications	22	54%
Use number of approved applications plus additional per cent	11	27%
Do not know	6	15%
No answer	2	5%

A majority of FSAs are not involved in the actual free and reduced process. This activity is usually handled by other school personnel, such as the nurse or Title I coordinator.

APPENDIX C

Income Statement Example

One of the basic financial reports used for a school lunch program is the income statement, also called profit and loss statement. The income statement has one basic feature--income and expenditures are compared for a given time period such as a month. Table C-1 shows an example format for an income statement. The income statement can also be prepared to provide figures on income and expenditures for each school building or to include a year-to-date summary. Since the income statement features a computation of the lunch program's net profit or net loss it provides a summary of how well or how poorly the program is operating, from a financial standpoint.

Contrast the income statement with the example financial statement, Table C-2. The financial statement provides much the same information that the income statement does but its focus is different and it is not recommended as a management tool. The financial statement focuses on the program's cash balance, which is important but which doesn't tell anyone how well the program is operating. For example, since the financial statement shows reimbursement received (usually from a previous month's sales and expenditures) it is possible to have a substantial ending cash balance but to have lost money on the program during the current month.

In summary, income statements are useful management tools which show the financial health of a lunch program. Cash balance is also an important tool but it should be kept using a separate report such as change in cash balance or change in financial position. The income statement can also be used as a diagnostic tool. For example, the percentage of expenditures going to cost of food used and labor should remain relatively constant. Significant changes in these percentages, especially if this information is reported for each school building, could highlight areas to study which could reveal food inventory spoilage, unproductive work practices, or other inefficiencies.

Table C-1

Income Statement for the month _____

(also called Profit and Loss Statement)

INCOME

Student "A" lunches	$_____
Student milk	$_____
Ala carte	$_____
Adult sales	$_____
Other sales	$_____
Reimbursement due	$_____
Total Income	$_____

EXPENDITURES

Food		
Beginning Inventory	$_____	
Purchases	$_____	
Ending Inventory	- $_____	
Cost of Food Used		$_____
Labor		$_____
Supplies		$_____
Services		$_____
Equipment		$_____
Total Expenditures		$_____

NET PROFIT (Total Income--Total Expenditures) $_____

Table C-2

Financial Statement for the month _____

BEGINNING CASH BALANCE		$_____
INCOME		
Student "A" lunches		$_____
Student milk		$_____
Ala carte		$_____
Adult sales		$_____
Other sales		$_____
Reimbursement received		$_____
Total Income		$_____
EXPENDITURES		
Food		
Beginning Inventory	$_____	
Purchases	$_____	
Ending Inventory	- $_____	
Cost of Food Used		$_____
Labor		$_____
Supplies		$_____
Services		$_____
Equipment		$_____
Total Expenditures		$_____
ENDING CASH BALANCE		$_____

(Beginning cash balance + total income - total expenditures)

APPENDIX D

Variable Names, Explanations, Means and Standard Deviations, Use in Models, and Data Sources

Data Source*	#	Variable**	Explanation	Means	Standard Deviations
	2	Year	Data was collected for 2 year period 74/75 and 75/76	0.5000	0.5000
V	3	Lunchdays	Number days lunch served each year for each district	178.8	4.846
V	4	Ameals	Total number Type A meals each district each year	352,600	195,800
V	5	Areduced	Total number reduced meals per district per year	14,020	12,920
V	6	Afree	Total number free meals per district per year	74,030	75,020
V	7	Childsales	Total amount child sales per district per year	130,000	83,200
V	8	Othersales	Total amount other sales per district per year	54,120	49,840
V	9	Adultsales	Total amount adult sales per district per year	12,490	10,840
V	10	Generalfund	Total amount general fund contribution per district per year	54,920	91,940
V	11	Total food	Total food costs per district per year	166,400	90,840
V	12	Totallabor	Total labor costs per district per year	140,300	91,620
V	13	Totalprogram	Total program costs per district per year	345,700	206,100
A	14	Secondlunches	Number secondary lunches per day	1086	581.0
A	15	Elemlunches	Number elementary lunches per day	1019	741.4
A	16	Secondprice	Secondary fully paid lunch charge (when districts had different Jr. and Sr. lunch prices a weighted price was used; when prices changed during the year a weighted price was used.)	0.4995	.0579

*Data Source Key found on page

**List of variables included on first run of each model found on page

Data Source	#	Variable	Explanation	Means	Standard Deviations
A	17	Elemprice	Elementary fully paid lunch charge (same note as #16)	0.4158	0.1303
A	18	Adultprice	Adult lunch charge (same note as #16)	0.7773	0.1235
A	19	Unit	Unit kitchen program	0.3214	0.4670
A	20	Satellite	Satellite kitchen program	0.1548	0.3617
A	21	Mixed	Unit and satellite kitchen program	0.5238	0.4994
IU	22	Enrollment	Total daily lunch building enrollment only. Kindergarten enrollment in lunch buildings deducted.	3647	2185
RC	23	Degree	Refers to FSA with degrees related to nutrition or food management	0.4048	0.4908
RC	24	Nondegree	Refers to FSAs who do not have degrees	0.4762	0.4994
RC	25	Manageco	Refers to programs headed by management company FSAs--their degree background is not known	0.1190	0.3238
Q	26	Yearsexp	Number years FSA has headed the district's program	7.917	6.484
Q	27	Laborhours	Total number labor hours for daily preparation, serving transporting food	199.8	123.3
Q	28	Employees	Total number employees for daily preparation, serving transporting food	39.67	24.34
Q	29	Unionemp	Number of union employees of above total	20.24	25.56
Q	30	Achoice	Offer of choice in Type A lunch 4 days a week	0.5952	0.4908
Q	31	Fruitnos	Number of Type A fruit choices	1.173	1.268
Q	32	Vegnoa	Number of Type A vegetable choices	0.9107	1.063
Q	33	Mainnoa	Number of Type A main course choices	1.232	1.535
Q	34	Dessertnoa	Number of Type A dessert choices	0.9583	1.279

Appendix D (continued)

Data Source	#	Variable	Explanation	Means	Standard Deviations
Q	35	Bchoice	Offer of a la carte choice	0.7143	0.4518
Q	36	Fruitnob	Number of a la carte fruit choices	1.405	1.489
Q	37	Vegnob	Number of a la carte vegetable choices	0.9524	1.243
Q	38	Mainnob	Number of a la carte main course choices	1.762	1.943
Q	39	Dessertnob	Number of a la carte dessert choices	1.893	1.982
Q	40	Menucycle	Advanced planning of menus	0.4284	0.4949
Q	41	Cyclerepeat	Number weeks before same menu repeated	1.976	2.440
Q	42	Repeat	Repeats of menus within the cycle	0.3571	0.7011
Q	44	Midstay	Middle School/Jr. High closed lunch policy	0.9167	0.2764
Q	45	Highstay	High School closed lunch policy	0.9107	0.2852
Q	46	Teach	Elementary school teachers teach nutrition	0.7619	0.4259
Q	47	Efsdteach	FSA teaches nutrition to elementary classes	0.2262	0.4184
Q	48	Efsdinfo	FSA supplies elementary teachers with nutrition info	0.4881	0.4999
Q	49	Encourage	FSA encourages elementary students to eat Type A lunch	0.4881	0.4999
Q	50	Elemother	Elementary nutrition activities not listed above	0.2500	0.4330
Q	51	Physed	Secondary Phys. Ed. teacher teaches nutrition	0.4242	0.4942
Q	52	Health	Secondary Health teacher teaches nutrition	0.6242	0.4843
Q	53	Homeec	Secondary Home Economics teacher teaches nutrition	0.7333	0.4422
Q	54	Otherteach	Other secondary teachers teach nutrition	0.1939	0.3954
Q	55	Sfsdteach	FSA teaches nutrition to secondary classes	0.2303	0.4210

Appendix D (continued)

Data Source	#	Variable	Explanation	Means	Standard Deviations
Q	56	Sfsdinfo	FSA provides secondary teachers with nutrition info	0.4365	0.4959
Q	57	Secother	Secondary nutrition activities not listed above	0.2061	0.4045
Q	58	PTA	FSA speaks to PTA	0.4182	0.4933
Q	59	Preschool	FSA speaks to preschool parents about nutrition and lunch program	0.1333	0.3399
Q	60	Kparents	FSA speaks to kindergarten parents and children about nutrition and lunch program	0.1576	0.3643
Q	61	Rotary	FSA speaks to community groups such as Rotary about nutrition and lunch program	0.0948	0.2787
PIS	62	Income	Computed by using per capita income figures for each municipality within each school district	3591	942.3
PIS	63	Sqmiles	Number square miles of each district	72.92	192.3
AC	64	Cbuildings	Per cent of district buildings with C sanitation violations*	22.48	33.97
AC	65	Cviolations	Average number C violations per building	0.7685	1.952
Q	66	Female	Sex of FSA	0.7455	0.4356
AGR	67	Nobuildings	Number of lunch buildings in each district	7.067	4.032
PIS	68	Population	Total population in each school district	19,650	11,260
Q	69	Nreportother	FSA did not report other costs on a questionnaire	2738	5845
V	70	Meals	Average number Type A meals served daily = $\frac{\text{Number Type A meals per year}}{\text{Number lunch days per year}}$	1959	1086
L	71	Partrate	Participation rate = $\frac{\text{Average number Type A meals daily}}{\text{Adjusted daily enrollment}}$	0.5556	0.1301

*C violations refers to a potential health hazard as determined by the Allegheny County Health Dept.

Data Source	#	Variable	Explanation	Means	Standard Deviations
	72	Secdollars	Used to compute fully paid Type A lunch price		
	73	Elemdollars	" " " " "		
	74	Dollars	" " " " "		
	75	Lunches	" " " " "		
V	76	Aprice	Weighted Type A price = $\frac{(\text{Total \# sec. lunches})(\text{Sec. price}) + (\text{Elem. lunches})(\text{Elem. Price})}{\text{Total \# Sec. lunches} + \text{Total \# Elem. lunches}}$	0.4788	.0545
V	77	Alaratio	Ratio of a la carte to total child sales = $\frac{\text{All other children's sales}}{\text{Total children's sales}}$	0.4518	.3519
	78	Cost	Total food cost plus total labor cost	306,600	179,600
	79	Alameals	Used to compute all meals		
	80	Adultmeals	" " "		
	81	Othermeals	" " "		
	82	Allmeals	Type A meals plus other meals	408,700	281,700
V	83	Mealcost	Cost per meal = $\frac{\text{Total annual food cost} + \text{Total annual labor cost}}{\text{Total Type A meals} + \text{Total adult meals} + \text{Total a la carte meals}}$	0.6489	.0935

(explanation of above: Number a la carte meals = $\frac{\text{Other children's sales per year}}{\text{Weighted Type A price}}$

Number adult meals per year = $\frac{\text{Adult sales per year}}{\text{Adult meal price}}$

Data Source	#	Variable	Explanation	Means	Standard Deviations
V	84	Genpercent	Per cent general fund pays of total program costs= Total general fund payment / Total program costs	0.1553	0.1561
V	85	Freeandmeals	Total number free and reduced meals per year	88,070	84,360
V	86	Freepercent	Free and reduced per cent of Type A meals = Free and reduced meals per year / Type A meals per year	0.2579	0.1823
Q	87	Unionpercent	Per cent union employees of total employees = Total number union employees / Total employees	0.4809	0.4109
A/V	88	Secpercent	Per cent secondary lunches of total lunches = Secondary lunches served daily / Average total elementary & secondary served daily	0.5475	0.1683
V	89	Dailymeals	Number all meals daily = All meals / Number days per year	2677.	1579.
Q	90	Manhoursper	Man hours per meal = Labor hours per day / Number all daily meals	0.0747	0.0154
	91	Foodcostper	Food cost per meal = Total food cost per year / Total all meals per year	0.3589	0.0493
	92	Logalarat	Logarithum of Variable #75		
	93	Density	Total school district population / Total square miles	1644	2343
	94	Labor Cost Per Meal	Total labor cost / Number all daily meals	0.2897	0.0752

Appendix D (continued)

* Data Source Key:

A = 75/76 Dept. of Education Agreements
V = 74/75 & 75/76 Reimbursement vouchers
L = Log sheets 75/76 Dept. of Education
IU = Intermediate Units
Q = Questionnaire mailed to 94 school districts
AC = Allegheny County Health Dept.
PIS = Pennsylvania Industrial Series, 1974
RC = Regional Consultant, Pennsylvania Dept. of Education, Food & Nutrition Service

** Model Variables:

Participation: 1,2,20-24, 26, 30-62, 67, 74, 75, 84, 90
Labor: 1, 2, 20, 21, 23, 24, 26, 30-62, 67, 75, 82, 84-87, 90
Food: 1, 2, 20, 21, 23, 24, 26, 30-45, 62, 67, 75, 82, 84, 86, 87, 90

Using the Participation Rate, Labor Cost, and Food Cost Models to Compare a School District to Other School Districts

This section provides examples of how to estimate participation rate, labor cost, or food cost using the models developed in this study in order to compare that estimate with the actual rate or costs in a school district. If there is a small difference or no difference between the actual value and the estimate then that school district is comparable to other districts in this study. However, if there is a 10% difference or more for participation rate or a 5¢ or more difference for food cost or labor cost, then the school district may be functioning significantly better or worse than other districts. Of course, this is only an indication of relative performance as the models reflect factors which influence participation rates or costs in most districts; the factors influencing participation rate or costs in a particular district may be substantially different. The following table gives three examples:

Model	Actual	Estimated	Difference	Comment
Participation Rate	.58	.69	-.11	Possible Participation Problem
Labor Cost	.36	.30	+.06	Possible Cost Problem
Food Cost	.29	.35	-.06	Comparatively Low Cost

Examples of calculating estimated participation rates, labor costs, and food costs follow.

Participation Rate Model: Example District

Participation Rate = a linear function of service type (bulk satellite, mixed, or unit), elementary, middle school /Junior High, and High School lunch policy (open or closed), Type A lunch price, percentage of meals free and reduced, and the logarithm of the ratio of a la carte sales to Type A sales.

The specific estimation of the model from this study is:

Participation rate = .51+ (-.08)(1, if satellite)
+ (-.05)(1, if mixed)
+ (.04)(1, if closed lunch, elementary)
+ (.05)(1, if closed lunch, middle/Junior)
+ (.04)(1, if closed, lunch, high school)
+ (-.33)(Type A price)
+ (.16)(free and reduced meal %)
+ (-.09)(natural logarithm of a la carte ratio*)

* Talk to secondary math or science teacher for information about logarithms.

Appendix E (continued)

Consider a hypothetical district which has a participation rate of .56 or .56 per cent, mixed kitchen types (both bulk satellite and unit), closed lunch policy at all grade levels, a 45¢ elementary meal price, a 50¢ secondary meal price (which yields an average price of 47.5¢ if half the meals are elementary and half are secondary), 26% free and reduced meals, and an a la carte ratio of .33 (The natural logarithm of the a la carte ratio is therefore -1.1). See Table E-1, page E-3 for Log Alaratio table.)

Substituting the values for this school district into the equation above, we have:

Participation rate = .51+ (-.08)(0)
+ (-.05)(1)
+ (.04)(1)
+ (.05)(1)
+ (.04)(1)
+ (-.33)(.475)
+ (.16)(.26)
+ (-.09)(-1.1)

Multiplying, we have:

Participation rate = .51 -0.0
-.05
+.04
+.05
+.04
-.16
+.04
+.10

Adding, we have:

Participation rate = .57

In this example, the participation rate model yielded an estimated participation rate of 57 per cent, while the actual value for the district was 56 per cent. Therefore, the actual participation rate was 1% lower than the model predicted for this district. Significant differences between the model and the actual situation may necessitate an assessment of the practices in the district. In this example the difference was not significant.

Labor Cost Model: Example District

Labor Cost Per Meal = a linear function of year, degree, Achoice (choice offered in Type A lunch), efsateach (FSA teaches nutrition education to elementary classes), income (per capita school district income), freepercent (per cent free and reduced lunches of total Type A lunches). union per cent (per cent union employees of all employees--see footnote, page 18, for definition of all employees), manhours per meal.

The specific estimation of the model from this study is:

TABLE E-1

Table of Log alaratio

Alaratio	Natural Logarithm of Alaratio, Approximate
0.05	-3.0
0.1	-2.3
0.2	-1.6
0.3	-1.2
0.4	-0.9
0.5	-0.7
0.6	-0.5
0.7	-0.4
0.8	-0.2
0.9	-0.1
1.0	-0.0
1.5	-0.4
2.0	-0.7
2.25	-0.8

Labor cost per meal ($) = .03 + (.04)(1 if 75/76, 0 if 74/75)
+ (.015)(1 if degree, 0 if non-degree)
+ (.02)(1 if Achoice, 0 if no Achoice)
+ (-.02)(1 if efsateach, 0 if not teach)
+ (.00002)(school district per capita income)
+ (.003)(free per cent)
+ (.002)(union per cent)
+ (1.88)(man hours per meal)

Consider a hypothetical district which has a labor cost per meal of $.29 for 1975/76, a non-degree FSA, no Achoice, efsdteach, $3582 per capita income, .15% free and reduced meals, 35% union employees, and .07 man hours per meal.

Substituting the values for this school district into the equation above, we have:

Labor cost per meal = .03 + (.04)(1)
+ (.015)(0)
+ (.02)(0)
+ (.00002)
+ (.02)($3582)
+ (.003)(.15)
+ (.002)(.35)
+ (1.88)(.07)

Multiplying, we have:

Labor Cost per meal = .03 + .04
+ 0
+ 0
- .02
+ .07
+ .0005
+ .0007
+ .1316

Adding, we have:

Labor Cost per meal = $.25

In this example, the labor cost model yielded an estimated labor cost per meal of $.25, while the actual labor cost per meal was $.29. The actual labor cost per meal was $.04 higher than the model predicted for this district.

Food Cost Per Meal: Example District

Food Cost Per Meal = a linear function of nreportother (FSA did not provide "Other" cost information on a questionnaire), per cent General Fund pays of total lunch program costs, secondary per cent of total Type A lunches, number of all daily meals served (Type A, Adult, and a la carte meals).

Appendix E (continued)

The specific estimation of the model from this study is:

Food Cost per Meal = .32 + (.02)(1 if Reports Other, 0 if doesn't)
+ (.09)(General Fund per cent)
+ (.08)(Secondary per cent)
+ (-.00001)(Daily Meals)

Consider a hypothetical district which has food cost per meal of $.38, did not report other on a questionnaire, has 19% General Fund support, 50% Secondary per cent Type A lunches and serves 2800 daily meals.

Substituting the values for this school district into the above equation, we have:

Food Cost Per Meal = .32 + (.02)(0)
+ (.09)(.19)
+ (.08)(.50)
+ (-.00001)(2800)

Multiplying, we have:

Food Cost Per Meal = $.35

In this example, the food cost model yielded an estimated food cost per meal of $.35, while the actual food cost per meal was $.38. The actual food cost was $.03 higher than the model predicted for this district.

TABLE E-2

Type A and A la Carte Choice

Type A Choice

Main Course

# Choices	# Districts
0	41
1	7
2	23
3	9
4	2
5	0
6	0
7	1
8	1
	84

Dessert

# Choices	# Districts
0	46
1	11
2	19
3	3
4	4
5	0
6	0
7	1
	84

Vegetable

# Choices	# Districts
0	45
1	6
2	31
3	1
5	1
	84

Fruit

# Choices	# Districts
0	41
1	6
2	22
3	12
4	3
	84

Ala Carte Choice

Main Course

# Choices	# Districts
0	31
1	11
2	17
3	13
4	7
5	1
6	1
7	0
8	2
9 or more	1
	84

Dessert

# Choices	# Districts
1	30
2	9
3	17
4	13
5	8
6	3
7	2
8	0
9 or more	2
	84

Vegetable

# Choices	# Districts
0	44
1	14
2	19
3	2
4	3
5	2
	84

Fruit

# Choices	# Districts
0	36
1	8
2	22
3	10
4	5
5	2
6	1
	84

TABLE E-3

"Other" Costs as Part of Total Program Costs for 1975/76

	%	Mean % of total program cost
Food	48	(computed from mean total food costs)
Labor	40 1/2	(computed from mean total labor costs)
Other*:		
Utilities	4	(mean of 70 who reported on information questionnaire)
Repairs	1	(mean of 60 who reported)
Consumables	2	(mean of 68 who reported)
Depreciation	2	(mean of 74 who reported)
Misc.	2 1/2	(garbage removal, expendables, etc.)
	100%	mean of who reported

*The mean for major "other" costs which comprise approximately 11% of total program costs was computed from answers to an information questionnaire sent to the 84 study school districts.

APPENDIX F

Revenue Implications of Changes in the Ratio of A la Carte Sales to Type A Sales

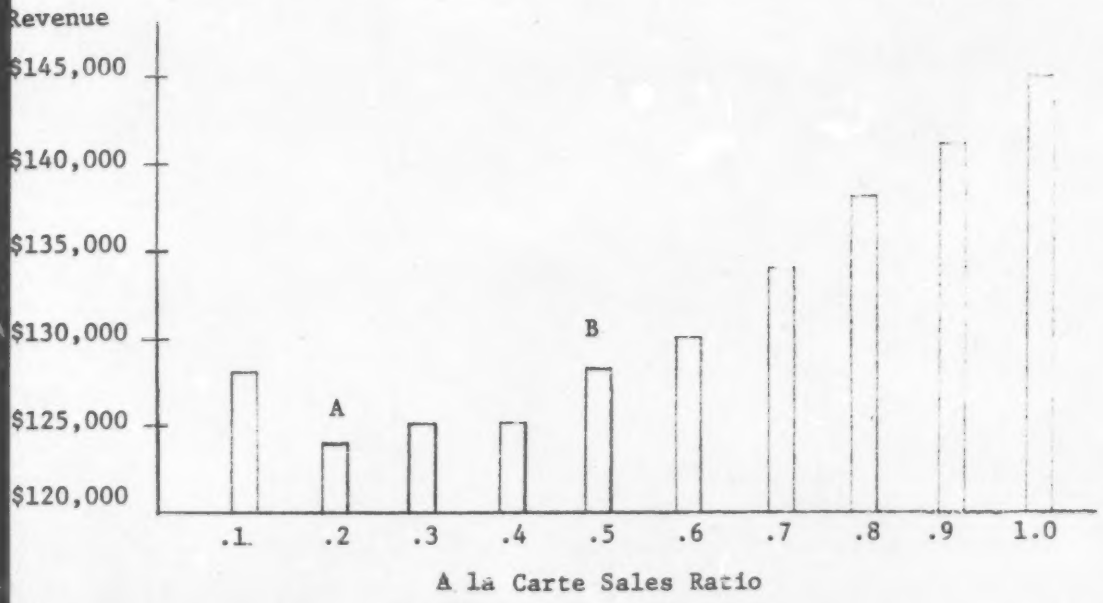
Consider the revenue implications of changes in the ratio of a la carte sales to type A sales.* (Figure 2, page 14 shows the relationship between participation rate and a la carte ratio estimated by the participation rate model). Figure F-1 shows the revenue implications of changes in a la carte sales ratio for two hypothetical districts, A and B. Both districts A and B serve 350,000 type A meals annually and charge 45¢ for a type A lunch. District A has 65% participation rate while district B's participation rate is 57%. Figure F-1 is based on the following assumptions:

(a) Figure 2 represents the relationship between a la carte sales ratio and participation rate

(b) Free and reduced meals are unaffected by changes in the a la carte program

Figure F-1

Fully Paid Type A and A la Carte Revenues for Different A la Carte Sales Ratios



* a la carte ratio = $\frac{\$ \text{ a la carte sales}}{\$ \text{ type A sales}}$

Figure F-1 shows that district A has revenues (excluding adult sales) of $124,000 and an a la carte sales ratio of .2 or 2%. District B has revenues of $128,000 and an a la carte ratio of .5 or 50%. District A in establishing its a la carte policy would increase revenues by increasing its alaratio to 30% but would increase revenues the most reducing its a la carte ratio to 10%. District A would have to increase its a la carte ratio to 60% or more to get more revenue than it would receive with the ratio at 10%. Also, district A's participation rate would increase from 65% to 71% as its a la carte ratio decreases from .2 to .1.

District B, in contrast to district A, would lose revenues by reducing its a la carte ratio but would gain revenues from increasing its a la carte ratio. For example, if district B's a la carte ratio increased from .5 to .8 its revenue would increase by about $10,000 and type A participation would only decrease from 57% to 53%.

The following conclusion can be drawn from Figure F-1: one district's best a la carte sales ratio from a revenue standpoint will be different than another district's best a la carte ratio. In the examples given, district A with a relatively small a la carte ratio (.2) should decrease its ratio to increase revenue while district B with a substantial a la carte ratio (.5) should increase its ratio to increase revenues. In any case, the revenue implications of changes in a la carte sales ratios are great enough that most districts should review their a la carte policies. However, several points of caution are in order:

(a) The relationship shown between a la carte sales ratio and participation rate in Figure 2 may not hold for a particular program.

(b) The relationship shown in Figure 2 may change with the introduction of "offer versus serve" type A meal policy in 1976-77/

(c) the specific relationship between revenue and a la carte sales ratio shown in Figure F-1 depends upon a lunch program's size, percent of free and reduced meals and type A meal price.

To explore the revenue implications of various a la carte ratios for a specific program the following method can be used:

(a) Record the program's current annual situation for the following factors: # annual fully paid type A lunches, # annual free type A lunches, type A participation rate, annual type A sales, annual a la carte sales. Compute the current a la carte sales ratio.

(b) Choose an a la carte sales ratio 10% or 20% higher or lower than the current ratio, for comparison purposes.

(c) Find the participation rate for the new a la carte sales ratio utilizing the graph, Figure 2 page 14. (Note: This relationship may differ from Figure 2 to a specific program by a constant factor. For example, Figure 2 shows a 65% participation rate corresponding to a .2 a la carte ratio. If a district has an a la carte ratio of .2 but a 67% partipation rate, the constant factor would be 2%. That is, any participation rate shown in Figure 2 for an a la carte sales ratio would be 2% higher than in Figure 2 for that program. For this district, a .4 a la carte ratio would correspond to a 61% participation rate rather than the 59% rate shown in Figure 2. This constant factor can therefore be used to adjust Figure 2 for a specific program.)

(d) Divide the total annual Type A meals in the initial case by the participation rate to establish a 100% participation annual meal base.

(e) Multiply the participation rate found in step (c) by the 100% meal base found in step (d). This will be the annual type A meals for the new case.

(f) Subtract the number of free and reduced meals from the annual type A meals found in step (e). (Presumably, free and reduced meals will not be affected by changes in the a la carte program).

(g) Multiply the fully paid type A meals found in step (f) by the type A meal price. Add the revenues, if any, from reduced meals to that figure.

(h) Multiply the fully paid and reduced type A revenues by the a la carte sales ratio to get the annual a la carte sales.

(i) Add the revenues from steps (g) and (h) to get total revenues for the new case.

(j) Create additional cases repeating steps (b) through (i) with other a la carte sales ratioes.

APPENDIX G

FSA Recommendations for Improving Food Service Programs (Answers to Question 17 "What suggestions or recommendations do you have re Food Service?")

FSAs to School District Administration

When planning kitchens consult the FSA.

FSA should have complete control--purchasing and hiring should be removed from politics.

Bookkeeping and accounting help is important.

Cooperation of everyone from students to Superintendent is important.

FSAs should be treated with consideration and not taken for granted.

Community and school board should know more about the program.

Teachers and parents need to be involved.

FSAs to Pennsylvania Dept. of Food and Nutrition

Need:

More information on uses and value of commodities.

More support re operational guidelines and educational materials.

Standardized forms for record keeping.

Clear cut outlines on how to collect information for the voucher.

Nutrition education to be made a priority.

To know sooner re: ne legislation.

FSA to USDA

Need more advance notice of deliveries to plan inventory and space.

Frozen food deliveries should not be made at the end of the school year when trying to clean out storage lockers.

Freezer space cannot keep pace with frozen food.

Since budgets are projected on expected commodity levels, a guarantee of food or cash is needed.

FSAs to FSAs

Do not be overstaffed.

Nutrition education would cut plate waste.

Develop cooperative buying power.

Know prices and products of purveyors.

More public relations is necessary to promote the program and the FSA.

Need real in-service program (twice a year on-site training is not sufficient).

Weekly rates for tickets lower labor costs and allows the cook to prepare better.

Serve eye appealing food.

Promote communication and cooperation among districts.

Treat elementary students well.

Talk to and take an interest in students.

The attitude of food service personnel is important.

Be receptive to people and ideas and be willing to change.

Figure H-1

Per Capita Income Profile

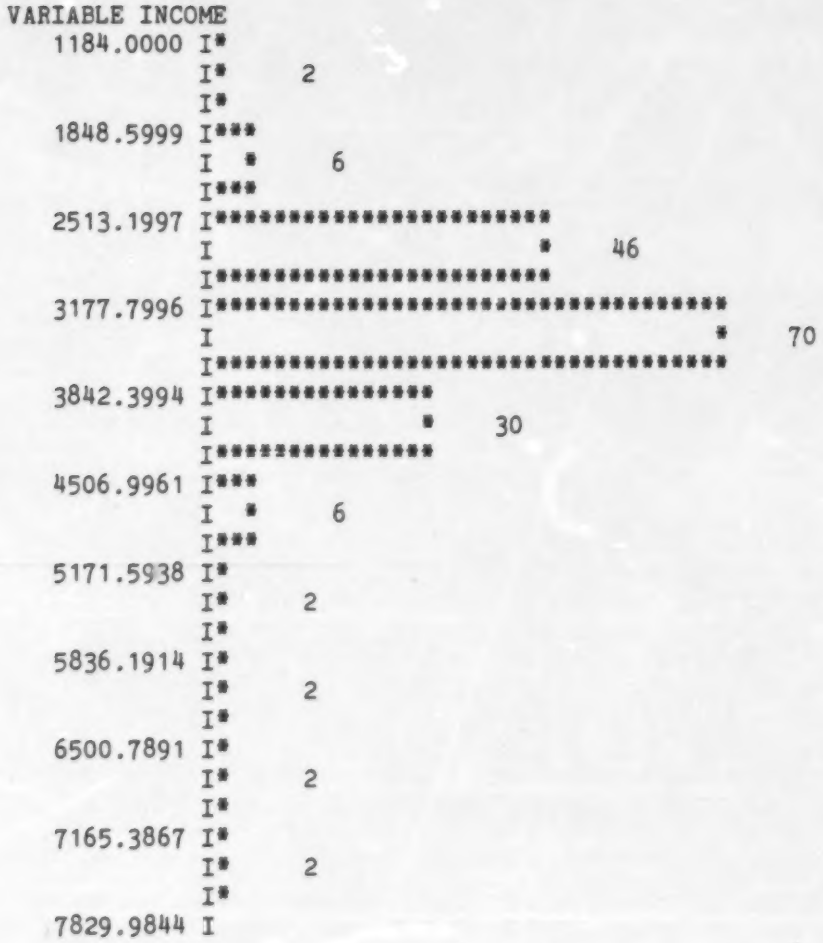


Figure H-2

A Price Profile

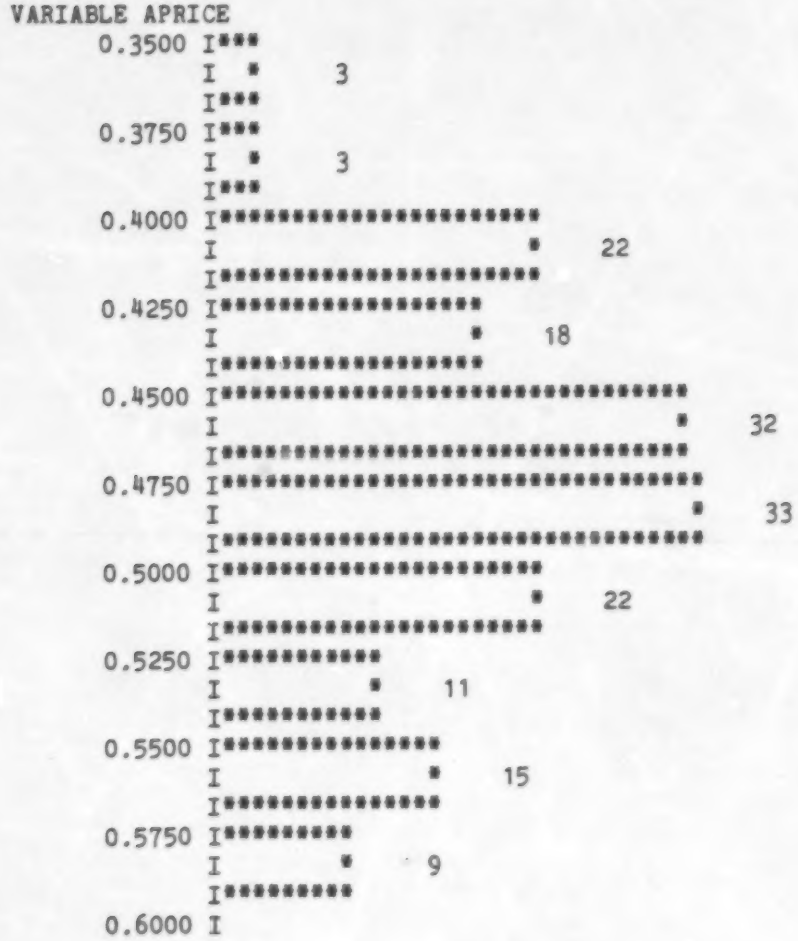


Figure H-3

Alaratio Profile

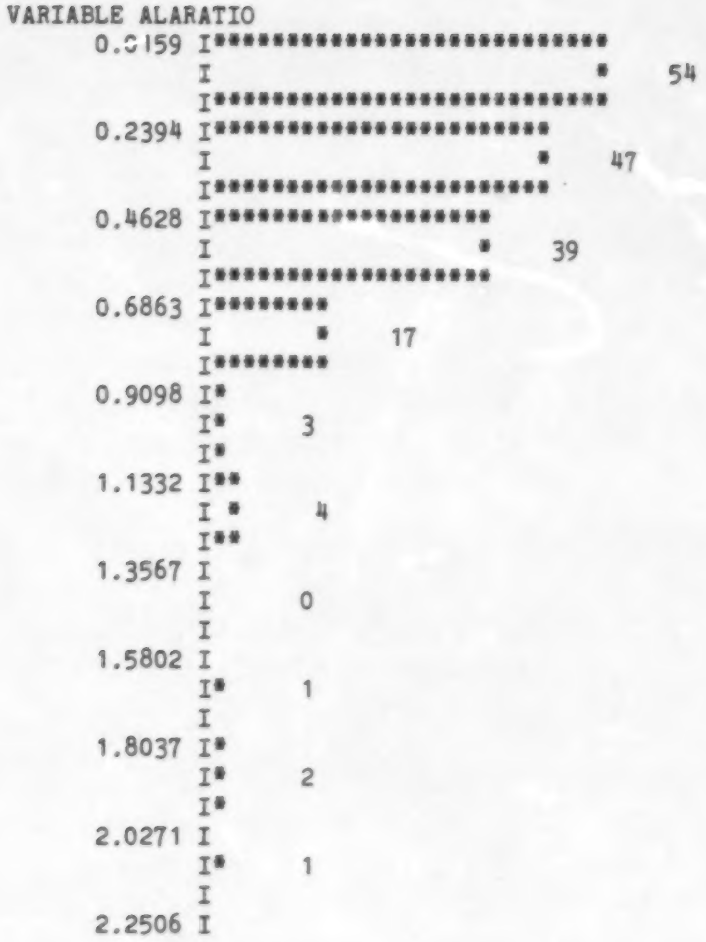


Figure H-4

Man Hours per Meal Profile

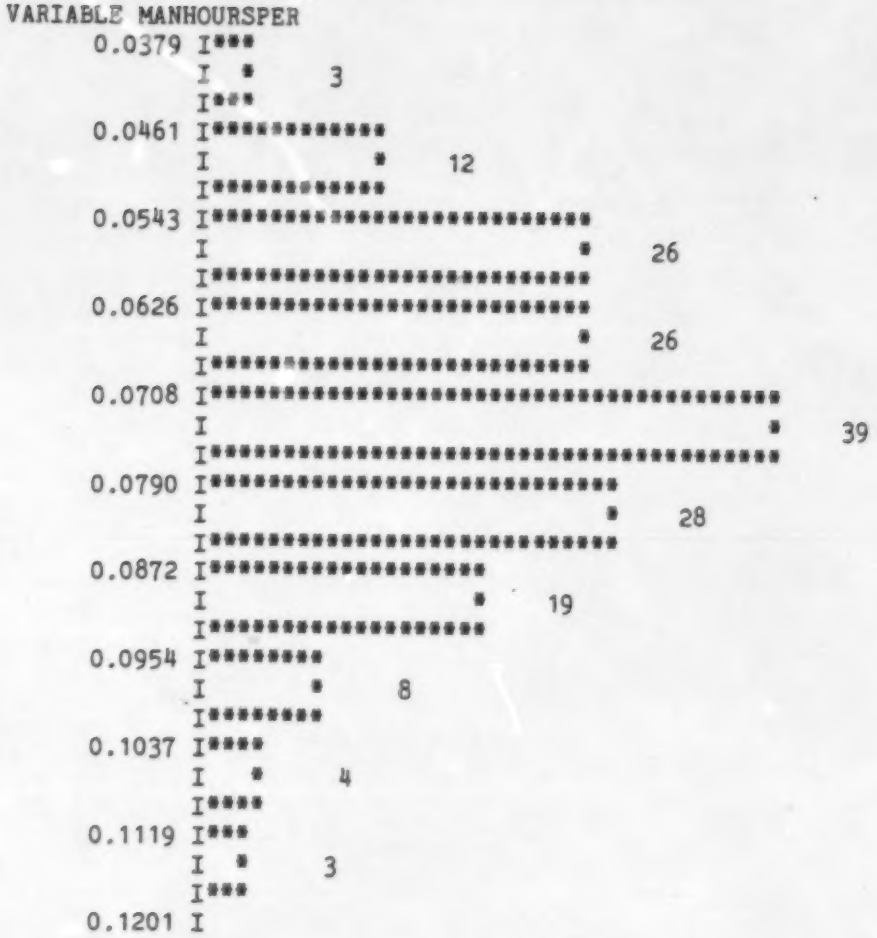


Figure H-5

Years Experience Profile

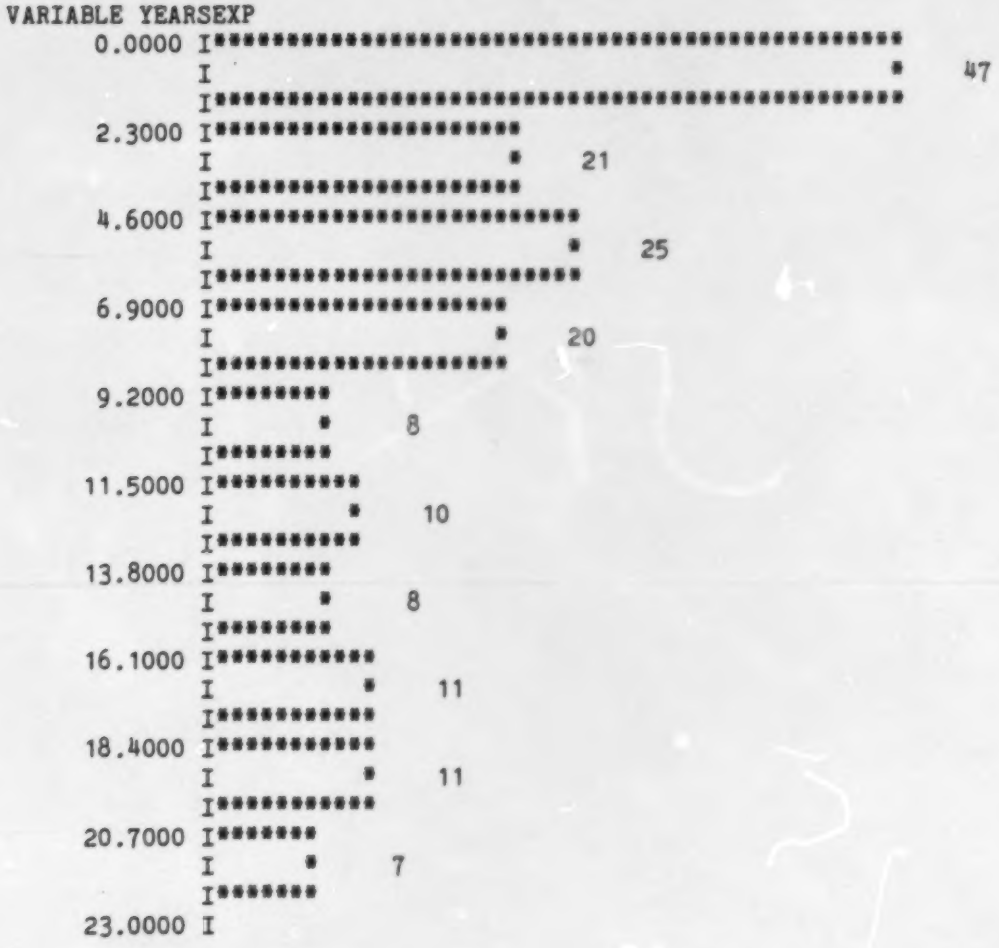


Figure H-6

Union Percent Profile

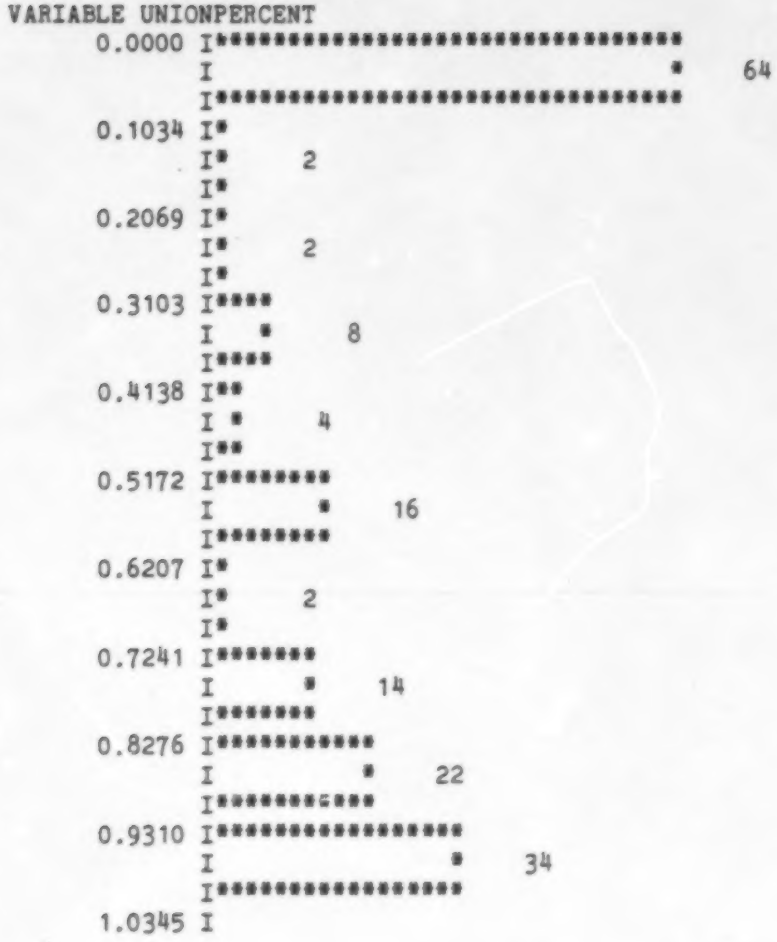


Figure H-7

Percent General Fund Support Profile

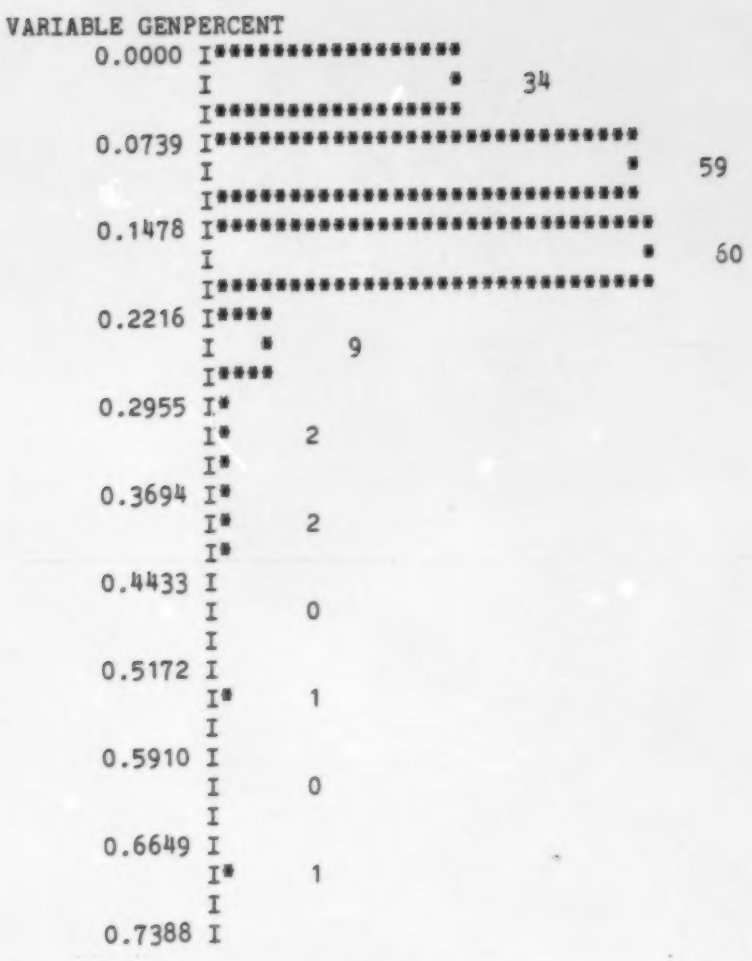
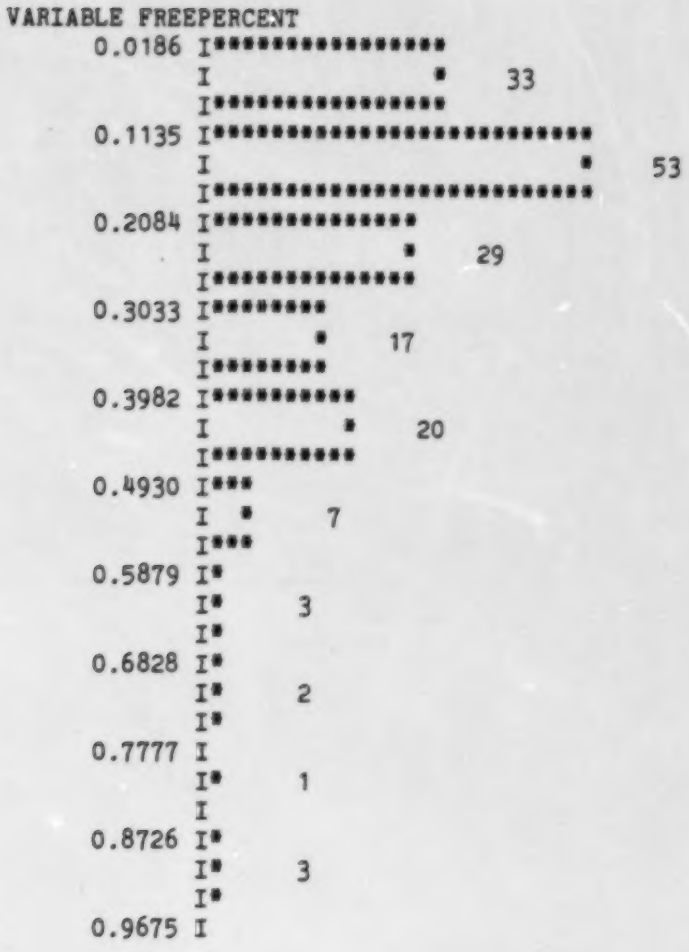


Figure H-8

Free and Reduced Percent Profile



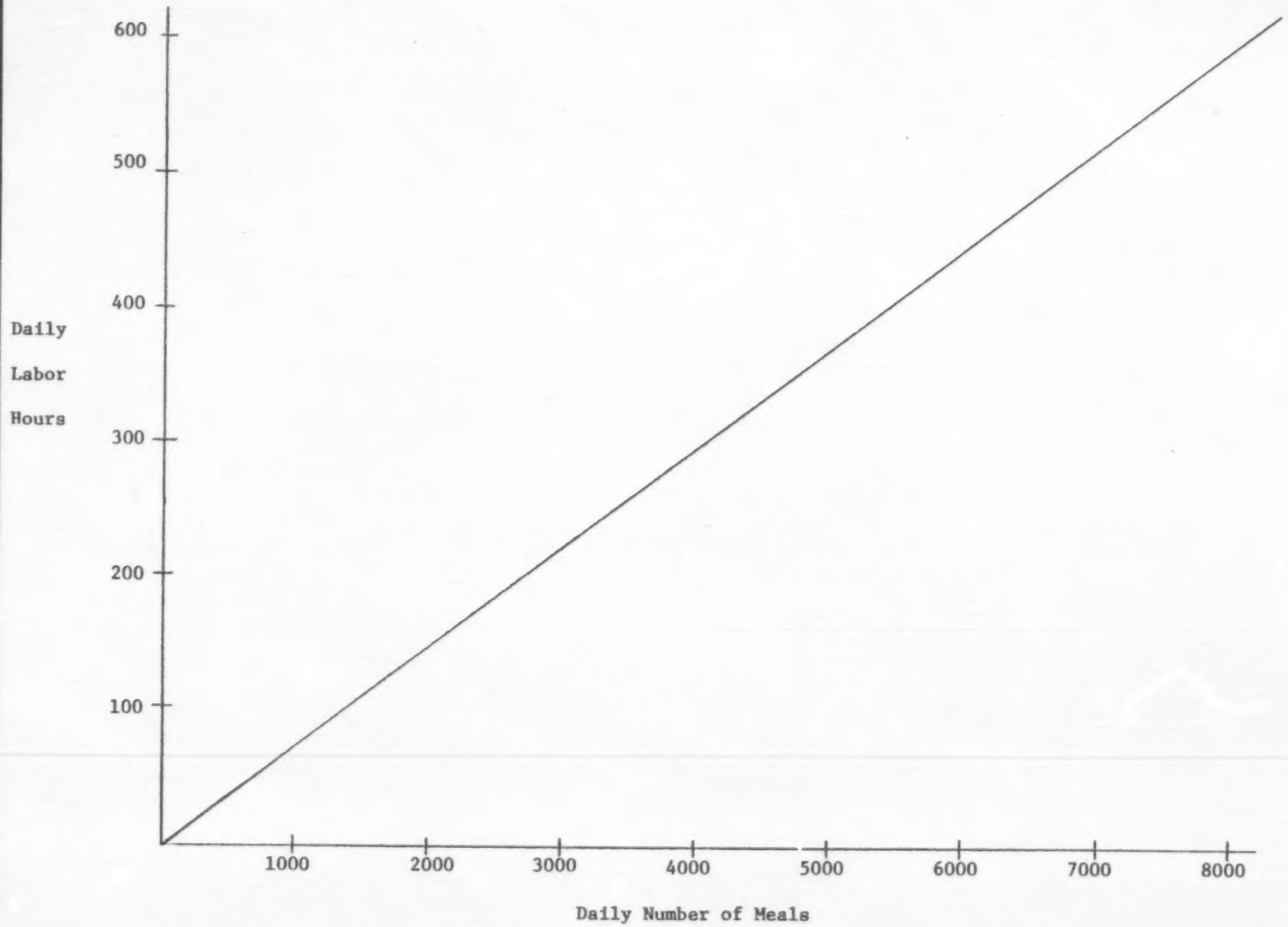
APPENDIX I

Labor Hours Per Meal and Daily Number of Meals

Since labor costs are a significant portion of the cost of producing a lunch, labor productivity is very important. Figure I-1 shows the relationship between daily labor hours and daily number of meals observed in this study. (See footnote page 18 for a description of which personnel are included in daily labor hours. See Appendix D, page D-6 for a description of how daily number of meals was calculated. Note that daily number of meals includes adult meals and adjusted a la carte sales.)

To compare a lunch program to typical practice use Figure I-1. For example, a program serving 2700 daily meals would be expected to have about 200 daily labor hours. If a program serving 2700 daily meals actually had 240 daily labor hours, a review of labor practices would be in order. Remember that both daily labor hours and daily number of meals must be computed using the same definitions used in this study, in order to use Figure I-1.

Daily Labor Hours in Relation to Daily Number of Meals



Nutrition Education Activities

The data for nutrition education activities was collected from an information questionnaire sent to FSAs in the 84 study school districts. The findings from the responses are shown in Table J-1. The questionnaire asked if certain nutrition education activities took place in the district and how often. For example, in 65 districts nutrition education is taught by elementary teachers. Answers to how often ranged from a regular part of the curriculum to annually. A possible reason for 32 people not answering how often may be the FSA's lack of information concerning the elementary curriculum. The findings also show that the FSA provides little nutrition education service at either the elementary or secondary level. One probable reason is the FSA's lack of available time due to other duties.

Nutrition Education Activities*

Variable #**	Activity	# Yes	%	How Often: Part of Curriculum (Regularly)	Monthly	Periodically	Annually	Upon Request	No answer to How Often
Elementary									
46	Teach	65	76%	19	2	8	3		33
47	Efedteach	13	23%	2		1	3	3	4
48	Efsdinfo	41	49%	5	2	9	1	8	16
49	Encourage	41	49%	6		6		1	28
50	Elemother	11	25%	Includes food posters, special promotion days, etc.					
Secondary									
51	Physed	35	42%	12		1	1		21
52	Health	52	62%	11		2	1		38
53	Homec	61	73%	34		2	1		24
54	Otherteach	16	19%	9	1	2			4
55	Sfsdteach	13	23%			6	1	5	1
56	Sfsdinfo	37	44%	3		9		10	15
57	Secother	18	21%	Includes meetings with Student Council, food posters, etc.					
Community									
58	PTA	35	42%			9	8	11	7
59	Preschool	11	13%			1	1	5	4
60	Kparents	13	16%			2	2	3	6
61	Rotary	7	8%			1	1	3	2

*Data collected from information questionnaire sent to 84 districts

**See Appendix D for variable explanation